1108
ILAC MRA

CE

EMC COMPLIANCE TEST REPORT

for

PC CASE+DC POWER BOARD

Trade Name : MOREX
Model Number : 36XX X=0~9+DC POWER BOARD
Agency Series : N/A
Report Number : C30708402-E
Date : July 11, 2003
Regulations : See below

Standards	Results (Pass/Fail)
EN 55022: 1994+A1: 1995+A2: 1997	PASS
EN 61000-3-2: 1995+A1: 1998+A2: 1998+A14: 2000	PASS
EN 61000-3-3: 1995	PASS
EN 55024: 1998	
- IEC 61000-4-2: 1995 +A2: 2001	PASS
- IEC 61000-4-3: 1995	PASS
- IEC 61000-4-4: 1995	PASS
- IEC 61000-4-5: 1995	PASS
- IEC 61000-4-6: 1996	PASS
- IEC 61000-4-8: 1993	PASS
- IEC 61000-4-11: 1994	PASS

Prepared for :

MOREX INFORMATION ENTERPRISE CO., LTD.
No.197, Sec.1, Chung Hsing Rd., Wu-Ku Hsiang,
Taipei Hsien, Taiwan, 248, R.O.C.

Prepared by :

C&C LABORATORY CO., LTD.
No. 165, Chung Sheng Road, Hsin Tien City,
Taipei, Taiwan, R. O. C.
TEL: (02)2217-0894
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NVLAP
Lab. Code: 200617-0

ACCREDITED

This report shall not be reproduced, except in full, without the written approval of C&C Laboratory Co., Ltd.

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EC-Declaration of Conformity

For the following equipment:

PC CASE+DC POWER BOARD

(Product Name)

36XX X=0~9+DC POWER BOARD / MOREX

(Model Designation / Trade name)

MOREX INFORMATION ENTERPRISE CO., LTD.

(Manufacturer Name)

No.197, Sec.1, Chung Hsing Rd., Wu-Ku Hsiang, Taipei Hsien, Taiwan, 248, R.O.C.

(Manufacturer Address)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC, Amended by 92/31/EEC, 93/68/EEC & 98/13/EC), For the evaluation regarding the Electromagnetic Compatibility (89/336/EEC, Amended by 92/31/EEC & 93/68/EEC & 98/13/EC) the following standards are applied:

[V] EN 55022: 1994+A1: 1995+A2: 1997

[V] EN 61000-3-2: 1995+A1: 1998+A2: 1998+A14: 2000

[V] EN 61000-3-3: 1995

[V] EN55024: 1998

IEC 61000-4-2: 1995 +A2: 2001, IEC 61000-4-3: 1995, IEC 61000-4-4: 1995

IEC 61000-4-5: 1995, IEC 61000-4-6: 1996, IEC 61000-4-8:1993, IEC 61000-4-11: 1994

The following manufacturer / importer or authorized representative established within the EUT is responsible for this declaration:

(Company Name)

(Company Address)

Person responsible for making this declaration:

(Name, Surname)

(Position / Title)

(Place) (Date) (Legal Signature)

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VERIFICATION OF COMPLIANCE

Equipment Under Test: PC CASE+DC POWER BOARD

Trade Name: MOREX

Model Number: 36XX X=0~9+DC POWER BOARD

Agency Series: N/A

Applicant: **MOREX INFORMATION ENTERPRISE CO., LTD.**
No.197, Sec.1, Chung Hsing Rd., Wu-Ku Hsiang,
Taipei Hsien, Taiwan, 248, R.O.C.

Manufacturer: **MOREX INFORMATION ENTERPRISE CO., LTD.**
No.197, Sec.1, Chung Hsing Rd., Wu-Ku Hsiang,
Taipei Hsien, Taiwan, 248, R.O.C.

Type of Test: EMC Directive 89/336/EEC for CE Marking

Technical Standards: EN 55022: 1994+A1: 1995+A2: 1997
EN 61000-3-2: 1995+A1: 1998+A2: 1998+A14: 2000
EN 61000-3-3: 1995
EN 55024: 1998
(IEC 61000-4-2: 1995 +A2: 2001, IEC 61000-4-3: 1995
IEC 61000-4-4: 1995, IEC 61000-4-5: 1995
IEC 61000-4-6: 1996, IEC 61000-4-8: 1993
IEC 61000-4-11: 1994)

File Number: C30708402-E

Date of test: July 09, 2003

Deviation: None

Condition of Test Sample: Normal

Final Result: Pass

Worst data: See below

Test Item	Freq.	Measured data	Margin (Mì C)	Remark
Radiated Emission	147.240 (MHz)	26.94 (dBì V/m)	-3.06 dB (± 5.5696 dB)	Vertical
Conducted Emission	1806.6250 (MHz)	39.77 (dBì V)	-6.23 dB (± 3.9632 dB)	Line

- The negative sign in Margin cell means under the specific limit.
- This test result traceable to national or international standards

The above equipment was tested by C&C Laboratory Co., Ltd. for compliance with the requirements set forth in EMC Directive 89/336/EEC and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Approved by Authorized Signatory: Rick Yeo

Rick Yeo / Manager

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GENERAL INFORMATION

Applicant:	**MOREX INFORMATION ENTERPRISE CO., LTD.** No.197, Sec.1, Chung Hsing Rd., Wu-Ku Hsiang, Taipei Hsien, Taiwan, 248, R.O.C.
Contact Person:	Steven Lin
Manufacturer:	**MOREX INFORMATION ENTERPRISE CO., LTD.** No.197, Sec.1, Chung Hsing Rd., Wu-Ku Hsiang, Taipei Hsien, Taiwan, 248, R.O.C.
File Number:	C30708402-E
Date of Test:	July 09, 2003
Equipment Under Test:	PC CASE+DC POWER BOARD
Trade Name:	MOREX
Model Number:	36XX X=0~9+DC POWER BOARD
Agency Series:	N/A
Type of Test:	EMC Directive 89/336/EEC for CE Marking
Technical Standards:	EN 55022: 1994+A1: 1995+A2: 1997 EN 61000-3-2: 1995+A1: 1998+A2: 1998+A14: 2000 EN 61000-3-3: 1995 EN 50024: 1998 (IEC 61000-4-2: 1995 +A2: 2001, IEC 61000-4-3: 1995 IEC 61000-4-4: 1995, IEC 61000-4-5: 1995 IEC 61000-4-6: 1996, IEC 61000-4-8: 1993 IEC 61000-4-11: 1994)
Frequency Range (EN 55022):	150kHz to 30MHz for Line Conducted Test 30MHz to 1000MHz for Radiated Emission Test
Test Site	**C&C LABORATORY CO., LTD.** No. 165 & No. 199, Chung Sheng Road, Hsin Tien City, Taipei Taiwan, R. O. C.

SYSTEM DESCRIPTION

EUT Test Procedure:

1. Windows XP Boots System.
2. Run Emctest.exe To Activate All Peripherals And Display “H” Pattern On Monitor Screen.
3. Run Emitest.exe choice “0” Run all test.

PRODUCT INFORMATION

Housing Type:	Plastic w/metal plate
EUT Power Rating:	DC 12V from AC Adaptor
AC power during Test:	230VAC, 50Hz to AC Adaptor
Adaptor Manufacturer:	1) ILAN 2) E.P.S.
Adaptor Model Number:	F19603A
AC Power Cord Type:	Unshielded, 1.8m (Detachable)
EUT I/O Cable Type:	Unshielded, 1.2m (Non-Detachable, with a core)X2
OSC/Clock Frequencies：	N/A

I/O Port of EUT:

I/O PORT TYPES	Q'TY	TESTED WITH
1) PIO Port	1	1
2) SIO Port	1	1
3) PS/2 K/B Port	1	1
4) PS/2 MOUSE Port	1	1
5) VIDEO-OUT Port (VGA)	1	1
6) AUDIO IN Port	1	1
7) MIC Port	1	1
8) EARPHONE Port	1	1
9) LAN Port	1	1
10) USB Port (2.0)	4	4
11) S-VIDEO OUT Port	1	0
12) AV-VIDEO OUT Port	1	0

Note: N/A

SUPPORT EQUIPMENT

Host PC Devices:

No	Equipment	Model #	Serial #	FCC/BSMI ID	Trade Name
1.	HDD	DTSA-210	N/A	BSMI ID:3892I133	IBM
2.	CD/R	SCR-242	PC010003100016	BSMI ID:3892A690 DOC	Quanta Storage
3.	CPU	N/A	N/A	N/A	VIA
4.	RAM	PC2700U-25330	N/A	N/A	elixir
5.	M/B	EPIA-M1000	N/A	D33172 DOC	VIA

Peripherals Devices:

No	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	USB Mouse	M-BE58	LZA10752403	DoC BSMI ID:42006012	LOGITECH	Shielded, 1.8m	N/A
2.	USB Mouse	M-BE58	LZE20302460	DoC BSMI ID:3892A471	LOGITECH	Shielded, 1.8m	N/A
3.	PS/2 Mouse	M-S69	N/A	DoC BSMI ID:3892D101	COMPAQ	Shielded, 1.8m	N/A
4.	PS/2 Keyboard	Y-SP29	SYU250387290	BSMI ID:3902C736	LOGITECH	Shielded, 1.8m	N/A
5.	Player	RQ-L317	N/A	N/A	PANASONIC	Unshielded, 2.4m	N/A
6.	Ear. / Mic.	MIC-31	N/A	N/A	HEAD PHONE	Unshielded, 1.8m	N/A
7.	Monitor	GH17PS	GH17H4LT604715L	DoC BSMI ID:3902B332	SAMSUNG	Shielded, 1.8m with two cores	Unshielded, 1.8m
8.	Modem	1414	N/A	IFAXDM1414	ACEEX	Unshielded, 1.2m	Unshielded, 1.8m
9.	Printer	EPSON C60	DR3K039402	BSMI ID:3902E006	EPSON	Shielded, 1.8m	Unshielded, 1.8m
10.	USB 2.0 HDD	ME-911	N/A	D33031	PORTABLE	Shielded, 1.2m	N/A
11.	USB 2.0 HDD	ME-911	N/A	D33031	PORTABLE	Shielded, 1.2m	N/A
12.	Server Notebook	02K6747	N/A	N/A BSMI ID:3892A285	N/A	Unshielded, 10m	Unshielded, 1.8m
13.	Cable X2	N/A	N/A	N/A	N/A	S-VIDEO Unshielded, 1.2m VIDEO Unshielded, 1.2m	N/A

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals.
Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

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TEST FACILITY

Location: No. 165 & No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan, R. O. C.

Description: There are six 3/10m open area test sites and two line conducted lab for final test.
The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 1992 and CISPR 22/EN 55022 requirements.

Site Filing: A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.

Registration also was made with Voluntary Control Council for Interference (VCCI). Registration No. R-1634/ C-1511

Site Accreditation: Accredited by NEMKO (Authorization #: ELA 103) for EMC & A2LA (Certificate #: 824.01) for EMC.

Also accredited by BSMI for the product category of Information Technology Equipment.

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

C&C LABORATORY CO., LTD (SHINTIEN LAB)

TAIPEI HSEIN, 231
TAIWAN

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

December 31, 2003

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 200617-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200617-0

C&C LABORATORY CO., LTD (SHINTIEN LAB)
No. 199, Chunghsen Rd., Hsintien City
Taipei Hsein, 231
TAIWAN
Mr. Kurt Chen
Phone: 886-2-2240222 Fax: 886-2-2245225
E-Mail: kurt_chen@cclab.com.tw
URL: http://www.cclab.com.tw

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS11	IEC/CISPR 11 (1990) and EN 55011 (1998): Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical Radio-Frequency Equipment
12/CIS14a	EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
12/CIS14b	AS/NZS 1044 (1995)
12/CIS14c	CNS 13783-1
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

December 31, 2003

Effective through

For the National Institute of Standards and Technology

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200617-0

C&C LABORATORY CO., LTD (SHINTIEN LAB)

NVLAP Code	*Designation / Description*
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/EM02a	IEC 61000-3-2, Edition 2.1 (2001-10) and EN 61000-3-2 (2000) : Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A)
12/EM03	EN 61000-3-3 (1995) and IEC 61000-3-3 (1995): Electromagnetic compatibility (EMC) - Part 3: Limits - Section 3. Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current <= 16 A
12/F01	ANSI C63.4 (2001) - cited in FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a	Conducted Emissions, Power Lines, 150 KHz to 30 MHz
12/F01b	Radiated Emissions
12/F18	FCC OST/MP-5 (1986): FCC Methods of Measurement of Radio Noise Emissions for ISM Equipment (cited in FCC Method 47 CFR Part 18 - Industrial, Scientific, and Medical Equipment)
12/T51	AS/NZS CISPR (2002) and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

December 31, 2003

Effective through

For the National Institute of Standards and Technology

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200617-0

C&C LABORATORY CO., LTD (SHINTIEN LAB)

NVLAP Code	*Designation / Description*
Immunity Test Methods:	
12/I01	IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995): Surge Immunity Test
12/I05	IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
12/I06	IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

December 31, 2003

Effective through

For the National Institute of Standards and Technology

EMC Laboratory
Preliminary Authorisation
Aut. No.: ELA 103

EMC Laboratory: **C & C Laboratory Co, Ltd**
(Hsintien Lab.)
No. 199, Chunghsen Rd., Hsintien City,
Taipei Hsien (231)
Taiwan, R.O.C.

Scope of Authorization: **All CENELEC standards [ENs] for EMC that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards that are listed on the accompanying page.**

Nemko has assessed the testing facilities, qualifications and testing practices and the relevant part of the organization. The above-mentioned EMC Laboratory has been validated against EN 45001 and ISO 17025 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA-INFO-10. During Nemko's visit it was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page(s).

Accordingly, Nemko will accept test reports from the laboratory as a basis for attesting conformity to these EMC Standards under either the European Union EMC Directive (89/336/EEC) or, when applicable, the national standards of countries Nemko has been authorised to attest conformity with.

In order to maintain the Authorisation, the information given in the pertinent ELA-INFO-10 must be carefully followed. Nemko is to be promptly notified about any changes in the situation at the EMC Laboratory, which may affect the basis for this Authorisation. The Authorisation may be withdrawn at any time if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through 31 December 2003.

Oslo, 17. December 2002

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

Nemko AS Gaustadalléen 30 P.O.Box 73 Blindern N-0314 Oslo Norway T +47 22 96 03 30 F +47 22 96 05 50 Enterprise number NO974404532

EMC Laboratory
Preliminary Authorisation
Aut. No.: ELA 103

SCOPE OF AUTHORIZATION

GENERIC & PRODUCT-FAMILY STANDARDS

EN 50091-2:1995 (doc=exp)	EN 50130-4:1995 + A1:98 (doc=exp)	EN 55011:1998 + A1 :99 (doc=exp) CISPR 11:97 + A1 :99
EN 55013:1990 + A12:1994 + A13:1996 + A14 :1999 (doc=exp) CISPR 13:1975 + A1:1983 mod. EN 55013 :2001 (doc=1.9.04) CISPR 13 :2001 (mod)	EN 55014-1:1993 + A1:1997 + A2 :1999 (doc=exp) CISPR 14:1993 + A1:1996 + A2 :1998 EN 55014-1 :2000 (doc=1.8.03) + A1 :2001 (doc=1.10.04) CISPR 14-1 :2000 + A1 :2001	EN 55014-2:1997 (doc=exp) + A1:2001 (doc=1.12.04) CISPR 14-2:1997 + A1 :2001
EN 55015:1996 + A1:97 + A2 :99 (doc=exp) CISPR 15:96 + A1:97 + A2 :98 EN 55015 :2000 (doc=1.8.03) + A1 :2001 (doc=1.12.04) CISPR 15 :2000 + A1 :2000	EN 55022:1994 + A1:1995 + A2:1997 (doc=exp) CISPR 22:1993 + A1:1995 + A2:1996 EN 55022:1998 + A1 :2000 (doc=1.8.03) + A2 :2002 (doc=not harmonised yet) CISPR 22:1997 + A1 :2000 + A2 :2002	EN 55024:1998 (doc=exp) + A1 :2001 (doc=1.10.04) + A2 :2002 (doc=not harmonised yet) CISPR 24:1997 + A1 :2001 + A2 :2002
EN 61000-3-2:1995 + A1:1998 + A2:1998 (doc=exp) + A14 :2000 (doc=1.1.04) IEC 61000-3-2:1995 + A1:1997 + A2:1998 EN 61000-3-2 :2000 (doc=1.1.04) IEC 61000-3-2 :2000 (mod) + A1 :2001	EN 61000-3-3 :1995 (doc=exp) + A1 :2001 (doc=1.5.04) IEC 61000-3-3 :1994 + A1 :2001 EN 61000-3-11 :00 (doc=1.11.03) IEC 61000-3-11 :00	EN 61000-6-1:2001 (doc=1.7.04) IEC 61000-6-1:1997 (mod) EN 50082-1 :1997 (doc=exp)
EN 61000-6-2:1999 (doc=exp) IEC 61000-6-2:1999 EN 61000-6-2:2001 (doc=1.7.04) IEC 61000-6-2:1999 (mod)	EN 61000-6-3 :2001 (doc=1.7.04) IEC 61000-6-3 :1996 (mod) EN 50081-1:1992 (doc=exp)	EN 61000-6-4 :2001 (doc=1.7.04) IEC 61000-6-4:1997 (mod) EN 50081-2:1993 (doc=exp)
EN 61326 :1997 + A1 :98 (doc=exp) + A2 :01 (doc=1.4.04) IEC 61326 :1997 + A1 :98 + A2 :00		

BASIC STANDARDS

EN 61000-4-2:1995 + A1:98 IEC 61000-4-2:1995 + A1:98 (EN 60801-1:1993 IEC 801.2:1991 IEC 801.2:1984)	EN 61000-4-3:1996 + A1:98 IEC 61000-4-3:1995 + A1:98 (IEC 801.3:1984 ENV 50140:1993 + ENV 50204:1995)	EN 61000-4-4:1995 IEC 61000-4-4:1995 (IEC 801.4:1990)
EN 61000-4-5:1995 IEC 61000-4-5:1995 (ENV 50142:1994)	EN 61000-4-6:1996 IEC 61000-4-6:1996 (ENV 50141:1993)	EN 61000-4-8:1993 IEC 61000-4-8:1993
EN 61000-4-11:1994 IEC 61000-4-11:1994	CISPR 16-1 :1999 + A1 :2002 CISPR 16-2 :1996 + A1 :1999 + A2 :2002 CISPR 16-3 :2000 + A1 :2002 CISPR 16-4 :2002	

Oslo, 17. December 2002

Kjell Bergh, Nemko Group EMC Co-ordinator

Nemko AS Gaustadalléen 30 P.O.Box 73 Blindern N-0314 Oslo Norway T +47 22 96 03 30 F +47 22 96 05 50 Enterprise number NO974404532

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

C & C LABORATORY CO., LTD
Hsi Chin, Taipei Hsien, Taiwan, R.O.C

for technical competence in the field of

Electrical Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002 (1994).

Presented this 30th day of January, 2002.

President
For the Accreditation Council
Certificate Number 824.01
Valid to January 31, 2004

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

C & C LABORATORY CO., LTD[1]
No. 81-1, Lane 210, Pa-De 2nd Rd.,
Lu Chu Hsiang, Taoyuan, TAIWAN, R.O.C.
Kurt Chen Phone: 002 886 3 324 0332
Fax: 002 886 3 324 5235

ELECTRICAL (EMC)

Valid to: January 31, 2004 Certificate Number: 0824-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Test Technology	Test Method(s)
Emissions	
Radiated & Conducted	CFR 47, FCC Part 15/18 using ANSI 63.4/1992&2000; AS/NZS 3548; VCCI V3 (2001); CNS 13438; CNS 13439; CNS 13783; CNS 13803; CNS 14115 CISPR 11; EN 55011; CISPR 14-1; EN 55014-1; CISPR 15; EN 55015; CISPR 22; EN 55022; EN 50081-1/ EN 61000-6-3: 2001; EN 50082-1/ EN 61000-6-4: 2001
Immunity	
Electrostatic Discharge (ESD)	IEC/EN 61000-4-2; IEC 801-2
Radiated Immunity	IEC/EN 61000-4-3; IEC 801-3
Electrical Fast Transient/Burst	IEC/EN 61000-4-4; IEC 801-4
Surge Immunity	IEC/EN 61000-4-5
Conducted Immunity	IEC/EN 61000-4-6
Power Frequency Magnetic Field Immunity	IEC/EN 61000-4-8
Voltage Dips, Short Interruptions, and Line Voltage Variations	IEC/EN 61000-4-11
Harmonics/Flicker	IEC/EN 61000-3-2; IEC/EN 61000-3-3

[1] Note: This accreditation covers testing performed at the main laboratory listed above, and the satellite laboratory located at No.199, Chung Sheng Road, Hsin Tien City, Taipei, TAIWAN, R.O.C.

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974

Product Immunity / Generic Immunity

ITE Product	CISPR 24; EN 55024
Home Appliance	CISPR 14-2; EN 55014-2
Residential; commercial and light Industry	EN 50081-2/ EN 61000-6-1: 2001
Industry	EN 50082-2/ EN 61000-6-2: 2001

On the following products/equipment:
Computer Components and Peripherals; Networking Components; Wireless Communications Components; Electronic Components; Televisions; Home Appliances

01/23/02

Peter Rhyne

CERTIFICATE

Company: C & C Laboratory Co., Ltd.

<Member No. 710 >

Facility: C&C Open Area Test Site No.D

(Radiation 3 and 10 meter site)

Location of Facility:

No.199, Chung Sheng Road, Hsin Tien City
Taipei Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No.: R-1434

Date of Registration: February 25 , 2002

This Certificate is valid until March 31 , 2005

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Company: C & C Laboratory Co., Ltd.
<Member No. 710 >

Facility: C&C Conducted Test Room No.D
(Main Ports Conducted Interference Measurement)

Location of Facility:
No.199, Chung Sheng Road, Hsin Tien City
Taipei Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No.: C-1511

Date of Registration: February 25 , 2002

This Certificate is valid until March 31 , 2005

Voluntary Control Council for Interference by Information Technology Equipment

Chinese National Laboratory Accreditation Certificate ROC

This is to certify that Hsintien Lab.,C & C LABORATORY CO., LTD.(Registration No.:1108) has been recognized by the Council of Chinese National Laboratory Accreditation as an accredited laboratory. The laboratory is confirmed to meet the requirements of ISO/IEC 17025 and has been registered for twelve items, and also meet the requirements of the Article 4 of Measures Governing the Recognition and Approval of Designated Laboratory for Commodities Inspection and has been registered for three items within the field of Electrical Testing. The details of the scope of accreditation are described in the following pages and this certificate is valid until June 30, 2006.

Neng-Jong Lin
Chairman of Chinese National Laboratory Accreditation Council

on July 01, 2003

(This document is invalid unless accompanied by all 4 pages)

Organization : C & C LABORATORY CO., LTD.
Laboratory : Hsintien Lab.
Registration No. : 1108
Laboratory Head : WANG, David
Testing Field : Electrical Testing
Date of Registration: 2003.07.01

Registration items	Test items	Test Methods	Ranges	Remarks
EJ0102 Harmonic current emissions	ITE and Peripheral Products	IEC 61000-3-2 EN 61000-3-2	Nominal Voltages of EUT:0 to 270 Vac(Single)50/60 Hz EUT Input Current:0 to 16 A Harmonic order:1 to 40 orders	
EJ0103 Voltage fluctuations and Flicker	ITE and Peripheral Products	IEC 61000-3-3 EN 61000-3-3	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 16 A	
EJ0113 Audio and television broadcast receivers and associated equipment	broadcast receivers and associated equipment	EN 55013 CISPR 13 CNS 13439	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Curren:0 to 30 A Mains terminal disturbance voltage:9 kHz to 30 MHZ Antenna terminal disturbance voltage:30 MHz to 1.75 GHz Radiation Disturbanc:30 MHz to 1.75 GHz Disturbance power:30 to 300 MHz	(*Registration item of Designated Laboratory for Commodities Inspection)
EJ0114 Electrical appliances and	Household electried applicances,portable toolsand similar	EN 55014-1 CNS 13783-1 CISPR 14-1	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 25 A Terminal Disturbance Voltage:9 kHz to 30 MHz	(*Registration item of

Registration items	Test items	Test Methods	Ranges	Remarks
systems	electrical apparatus		Disturbance power:30 to 300 MHz CLICK:150 kHz to 30 MHz	Designated Laboratory for Commodities Inspection)
EJ0122 Systems and apparatus of the telecommunication and information technology	ITE and Peripheral Products	CISPR 22 BN 55022 CNS 13438 AS/NZS 3548 VCCI 47 CFR part 15 Subpart B	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 25 A Terminal disturbance Voltage:9 kHz to 30 MHz Radiation Disturbance:30 MHz to 26.5 GHz	(*Registration item of Designated Laboratory for Commodities Inspection)
EJ0202 Electrostatic discharge tests	ITE and Peripheral Products	IEC 61000-4-2 BN 61000-4-2 CNS 13022-1	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 16 A Air discharge:0.2 to 30 kV(+/-) Contact Discharge:0.2 to 10 kV(+/-)	
EJ0203 Radiated susceptibility tests	ITE and Peripheral Products	IEC 61000-4-3 BN 61000-4-3 BMV 50204	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 30 A Frequency range:26 MHz to 1.0 GHz(Field Strength:10V/m, AM, Pulse Modulation)	
EJ0204 Electrical fast transient/burst tests	ITE and Peripheral Products	IEC 61000-4-4 BN 61000-4-4 CNS 13022-2	Power Range of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 30 A Disturbance power:0.2 to 4.5 kV	
EJ0205 Surge/lightning	ITE and Peripheral Products	IEC 61000-4-5 BMV 50142	Nominal Voltages of EUT:0 to 270 Vac(single)50/60Hz DC 100 V EUT Input Current:0 to 16 A(AC/DC)	

Registration items	Test items	Test Methods	Ranges	Remarks
tests		CNS 13022-3 EN 61000-4-5	Disturbance powe:0.2 to 4.5 kV Test Port:Power Cable,Signal Line	
EJ0206 Conducted susceptibility tests	ITE and Peripheral Products	IEC 61000-4-6 EN 61000-4-6 ENV 50141	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 16 A Disturbance power:15 kHz to 230 MHz(Test Voltage:10 Vrms,AM Modulation)	
EJ0208 Power frequency magnetic field immunity test	ITE and Peripheral Products	IEC 61000-4-8 EN 61000-4-8	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 16 A Continsous Magnetic Field:1 to 100 A/m	
EJ0211 Voltage dips,short interruptions and voltage variations immunity tests (Null Below)	ITE and Peripheral Products	IEC 61000-4-11 EN 61000-4-11	Nominal Voltages of EUT:0 to 270 Vac(single)50/60 Hz EUT Input Current:0 to 16 A Short interruptions:100 % Test level of dips:0 to 100 % voltage variations	

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TEST EQUIPMENT LIST (EMISSION)

Instrumentation: The following list contains equipment used at C & C Laboratory Co., Ltd. for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2-1988 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 9kHz to 1.0 / 2.0 GHz.

Equipment used during the tests:

Open Area Test Site: #E

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
SPECTRUM ANALYZER	ADVANTEST	R3261A	21720276	04/12/03	04/11/04
MEASURE RECEIVER	R&S	ESVS30	828488/004	09/14/02	09/13/03
AMPLIFIER	H.P.	8447D A	2727A05764	05/04/03	05/03/04
ANTENNA	SCHAFFNER	CBL 6143	5084	03/16/03	03/15/04
CABLE	BELDEN	9913	N-TYPE07	01/10/03	01/09/04

Conducted Area Test Site: CONDUCTION B

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
TEST RECEIVER	R&S	ESHS20	840455/006	03/24/03	03/23/04
LISN	EMCO	3825/2	1842	01/29/03	01/28/04
LISN (EUT)	EMCO	3810/2	9801-1849	04/16/03	04/15/04
BNC CABLE	TIMES MICROWAVE	LMR-195	BNC 03	05/02/03	05/01/04

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

TEST EQUIPMENT LIST

For Power Harmonic & Voltage Fluctuation/Flicker Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER/SIGNAL CONDITIONING UNIT	CCN 1000-1	72122	11/14/2002	11/13/2003
SCHAFFNER/5KVA AC POWER SOURCE	NGS 1007	55131	No Calibration Required	No Calibration Required

For ESD test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER/ ESD Simulator	NSG 438	129 0238	4/23/2003	4/22/2004

For Radiated Electromagnetic Field immunity Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
R&S / Signal Generator	SMY 02	DE13751	01/13/2003	01/12/2004
IFI / Combination Amplifier	SMX100	2067-1196	No Calibration Required	No Calibration Required
IFI / Leveling Pre-Amplifier	LPA-5B	714-0695	No Calibration Required	No Calibration Required
EMCO / Biconilog Antenna	3142	9609-1087	No Calibration Required	No Calibration Required

For Fast Transients/Burst test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER / EFT Generator	BEST EMC V2.3	200031A024SC	11/14/2002	11/13/2003
SCHAFFNER / Capacitive Clamp	N/A	N/A	No Calibration Required	No Calibration Required

For Surge Immunity test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER/ Surger Generator	BEST EMC V2.3	200031A024SC	11/14/2002	11/13/2003
SCHAFFNER/ Telecom Lines Coupler DECOUPLER	CDN118	19328	No Calibration Required	No Calibration Required

For CS test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER / RF GENERATOR	NSG 2701-1	1061	07/31/2002	07/30/2003
SCHAFFNER / Power Line Coupling Decoupling Network	CDN M316	19600	11/12/2002	11/11/2003
SCHAFFNER / Power Line Coupling Decoupling Network	CDN M216	19294	11/21/2002	11/20/2003
SCHAFFNER/EM CLAMP	KEMZ 801	19227	11/12/2002	11/11/2003

For Power Frequency Magnetic Field test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER / INDUCTION COIL INTERFACE	INA 21141	6009	11/27/2002	11/26/2003
SCHAFFNER / 5KVA AC POWER SOURCE	NSG 1007	55131	No Calibration Required	No Calibration Required
CHY/ AC/DC Clamp Meter	932C	2K0900285	10/24/2002	10/23/2003

For Voltage Dips/Short Interruption and Voltage Variation Immunity test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
SCHAFFNER / Dips/Inerruption/Variations Tester	BEST EMC V2.3	200031A024SC	11/14/2002	11/13/2003
HOLA / Multimeter	DM-3000	214530	11/18/2002	11/17/2003

SECTION 1 EN 55022 (LINE CONDUCTED & RADIATED EMISSION)

MEASUREMENT PROCEDURE
(PRELIMINARY LINE CONDUCTED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, if needed, was placed as per EN 55022.
3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.
4) The EUT received DC 12V power through AC Adaptor and Line Impedance Stabilization Network (LISN) which supplied power source of 230VAC/ 50Hz and was grounded to the ground plane.
5) All support equipment received power from a second LISN supplying power of 110VAC/60Hz, if any.
6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7) Analyzer / Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
8) During the above scans, the emissions were maximized by cable manipulation.
9) The following test mode were scanned during the preliminary test:

   Mode:

   1. NORMAL MODE

10) After the preliminary scan, we found the following test mode producing the highest emission level.

    Mode: 1.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

MEASUREMENT PROCEDURE
(FINAL LINE CONDUCTED EMISSION TEST)

1) EUT and support equipment was set up on the test bench as per step 10 of the preliminary test.

2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Q.P. mode, then the emission signal was re-checked using an A.V. detector.

3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
x.xx	43.95	---	56	46	-12.05	---	L1

Freq. = Emission frequency in MHz

Raw dBuV = Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB

Limit dBuV = Limit stated in standard

Margin dB = Reading in reference to limit

Note = Current carrying line of reading

"---" = The emission level complied with the Average limits, with at least 2dB margin limits, so no further recheck.

Calculation example:

Margin (dB) = RAW (dBuV) – Limit (dBuV)

LINE CONDUCTED EMISSION LIMIT (EN 55022)

Frequency	Maximum RF Line Voltage	
	Q.P.	AVERAGE
150kHz-500kHz	66-56dBuV	56-46dBuV
500kHz-5MHz	56dBuV	46dBuV
5MHz-30MHz	60dBuV	50dBuV

Note: The lower limit shall apply at the transition frequency.

MEASUREMENT PROCEDURE
(PRELIMINARY RADIATED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per EN 55022.

3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.

4) The EUT received DC 12V power source from AC Adaptor (AC 230V/50Hz) to the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable, if any.

5) The antenna was placed at 10 meter away from the EUT as stated in EN 55022. The antenna connected to the analyzer via a cable and at times a pre-amplifier would be used.

6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

7) The following test mode were scanned during the preliminary test:

Mode:

1. NORMAL MODE

8) After the preliminary scan, we found the following test mode producing the highest emission level.

Mode: 1.

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for final testing.

MEASUREMENT PROCEDURE
(FINAL RADIATED EMISSION TEST)

1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.

2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Peak reading is presented. If EUT emission level was less-2dB to the limit, then the emission signal was re-checked using a Q.P. detector.

4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
xx.xx	14.0	11.2	26.2	30	-3.8

Freq.	= Emission frequency in MHz
Raw Data (dBuV/m)	= Uncorrected Analyzer / Receiver reading
Corr. Factor (dB)	= Antenna factor + Cable loss – Amplifier gain
Emiss. Level (dBuV/m)	= Raw reading converted to dBuV/m and CF added
Limit (dBuV/m)	= Limit stated in standard
Margin (dB)	= Reading in reference to limit
P	= Peak Reading
Q	= Quasi-peak Reading
A	= Average Reading

Calculation example:

Margin (dB) = Emiss. Level (dBuV/m) – Limits (dBuV/m)
Emission Level (dBuV/m)=Raw Data (dBuV/m) + Corr Factor (dB)

RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBu V/m/ Q.P.)
30-230	10	30
230-1000	10	37

Note: The lower limit shall apply at the transition frequency.

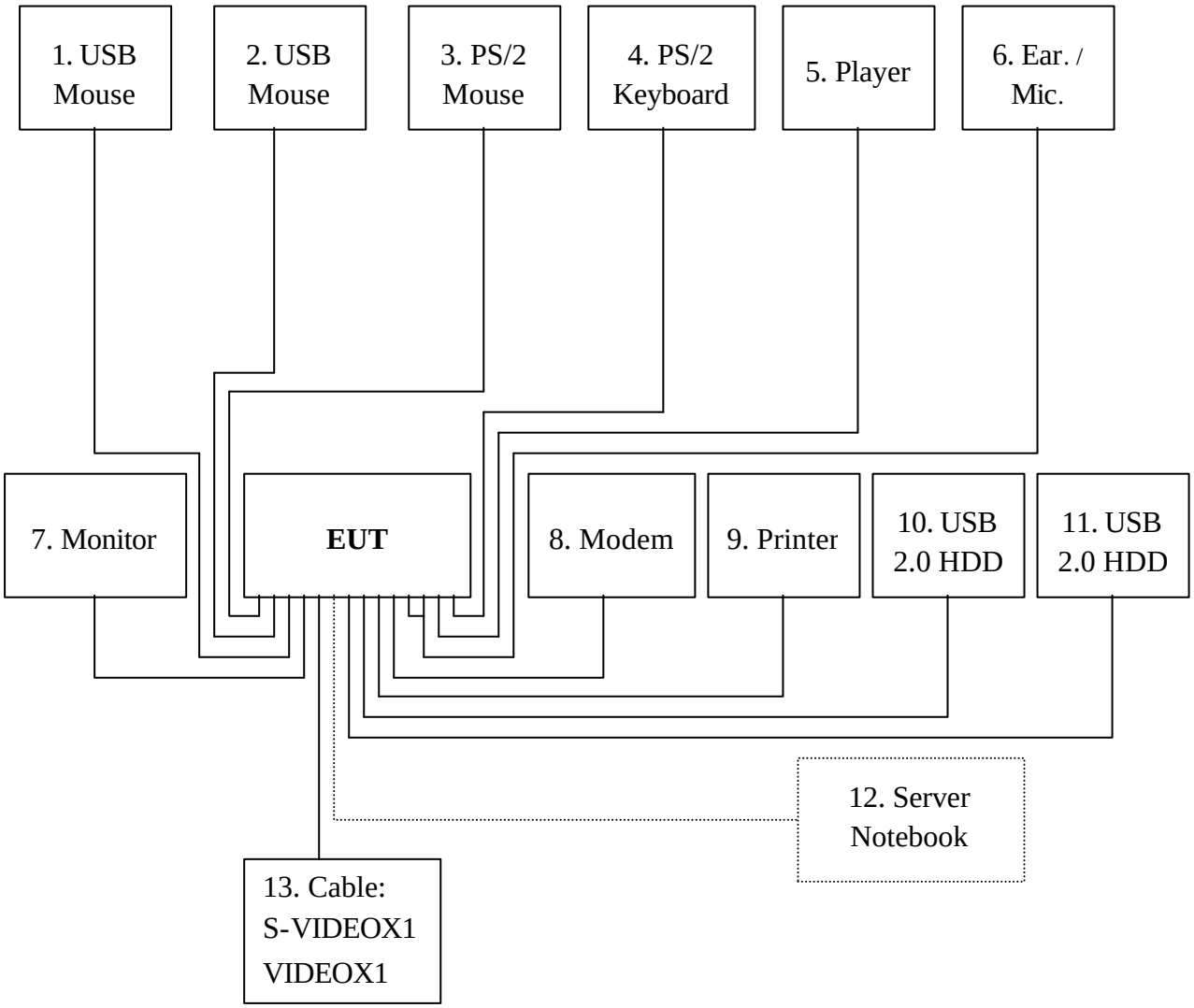
BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

EUT: PC CASE+DC POWER BOARD

Trade Name: MOREX

Model Number: 36XX X=0~9+DC POWER BOARD



SUMMARY DATA
(LINE CONDUCTED TEST)

Model Number: 36XX X=0~9+DC POWER BOARD **Location:** Conducted B

Tested by: Marion Yu

Test Mode: Mode 1

Test Results: Passed

Temperature: 27°C **Humidity:** 60%RH

(The chart below shows the highest readings taken from the final data)

FREQ KHz	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
176.1250	49.74	44.08	65.25	55.25	-15.51	-11.17	L1
579.1250	39.47	36.03	56.00	46.00	-16.53	-9.97	L1
1806.6250	41.63	39.77	56.00	46.00	-14.37	-6.23	L1
5375.0000	24.08	21.60	60.00	50.00	-35.92	-28.40	L1
6453.0000	28.72	21.63	60.00	50.00	-31.28	-28.37	L1
21593.0000	38.00	35.87	60.00	50.00	-22.00	-14.13	L1
178.1250	45.70	42.15	65.20	55.20	-19.50	-13.05	L2
1569.6250	37.29	35.37	56.00	46.00	-18.71	-10.63	L2
1804.6250	35.29	32.81	56.00	46.00	-20.71	-13.19	L2
5399.0000	25.77	17.93	60.00	50.00	-34.23	-32.07	L2
6445.0000	27.18	22.98	60.00	50.00	-32.82	-27.02	L2
21647.0000	33.94	27.01	60.00	50.00	-26.06	-22.99	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

SUMMARY DATA
(RADIATED EMISSION TEST)

Model Number: 36XX X=0~9+DC POWER BOARD **Location:** Site # E

Tested by: Marion Yu **Polar:** Vertical--10m

Test Mode: Mode 1 **Test Results:** Passed

Detector Function: Quasi-Peak

Temperature: 28°C **Humidity:** 65%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
42.700	27.94	-5.97	21.97	30.00	-8.03
72.510	40.85	-14.05	26.80	30.00	-3.20
115.540	33.47	-9.79	23.68	30.00	-6.32
147.240	36.25	-9.31	26.94	30.00	-3.06
167.430	32.82	-9.72	23.10	30.00	-6.90
177.500	32.80	-9.46	23.34	30.00	-6.66
200.000	35.85	-9.23	26.62	30.00	-3.38

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SUMMARY DATA
(RADIATED EMISSION TEST)

Model Number: 36XX X=0~9+DC POWER BOARD **Location:** Site # E

Tested by: Marion Yu **Polar:** Horizontal--10m

Test Mode: Mode 1 **Test Results:** Passed

Detector Function: Peak

Temperature: 28°C **Humidity:** 65%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
42.770	31.43	-5.97	25.46	30.00	-4.54
72.810	39.09	-14.11	24.98	30.00	-5.02
115.570	33.24	-9.79	23.45	30.00	-6.55
126.110	31.79	-9.34	22.45	30.00	-7.55
154.770	32.12	-9.64	22.48	30.00	-7.52
177.640	30.97	-9.46	21.51	30.00	-8.49
251.910	32.70	-8.48	24.22	37.00	-12.78
367.140	27.63	-4.51	23.12	37.00	-13.88

SECTION 2 EN 61000-3-2 & EN 61000-3-3 (POWER HARMONICS & VOLTAGE FLUCTUATION / FLICKER)

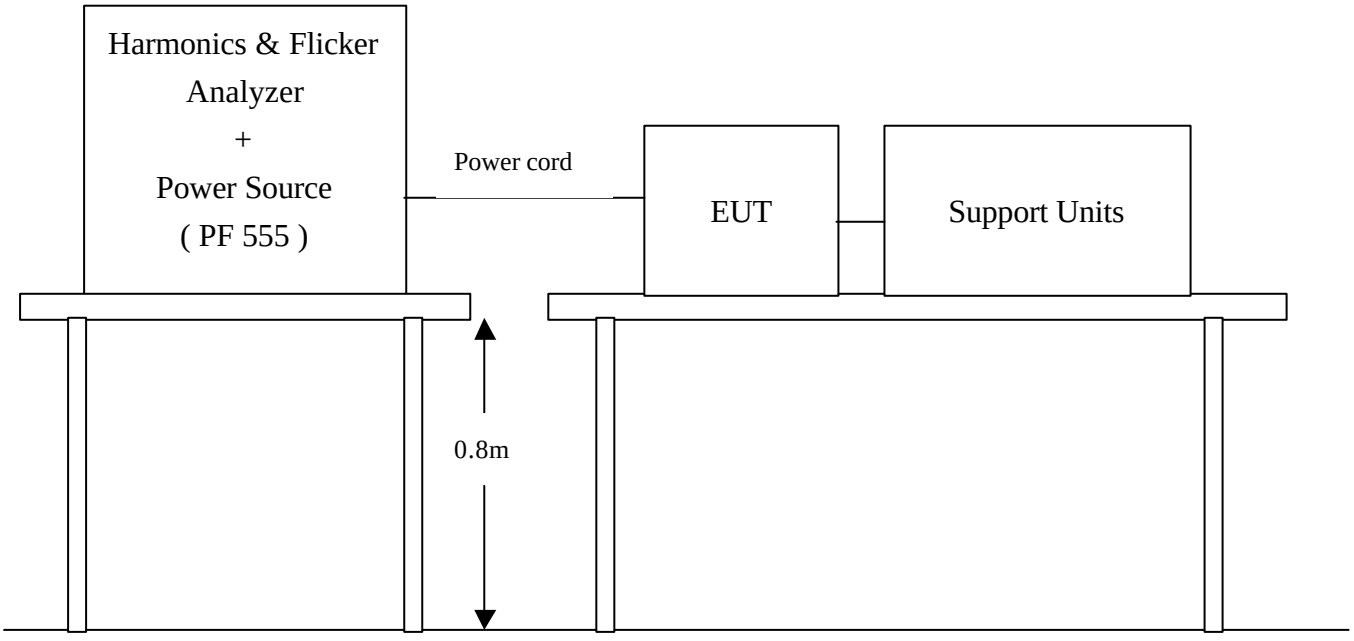
POWER HARMONICS MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-2 (1995+A1: 1998+A2: 1998 + A14: 2000)
Limits : ☐ Class A, ☑ Class D
Temperature : 19^0C
Humidity : 56%
Test By : Marion Yu

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-3 (1995)
Limits : § 5 of EN 61000-3-3
Temperature : 19^0C
Humidity : 56%
Test By : Marion Yu

Block Diagram of Test Setup:

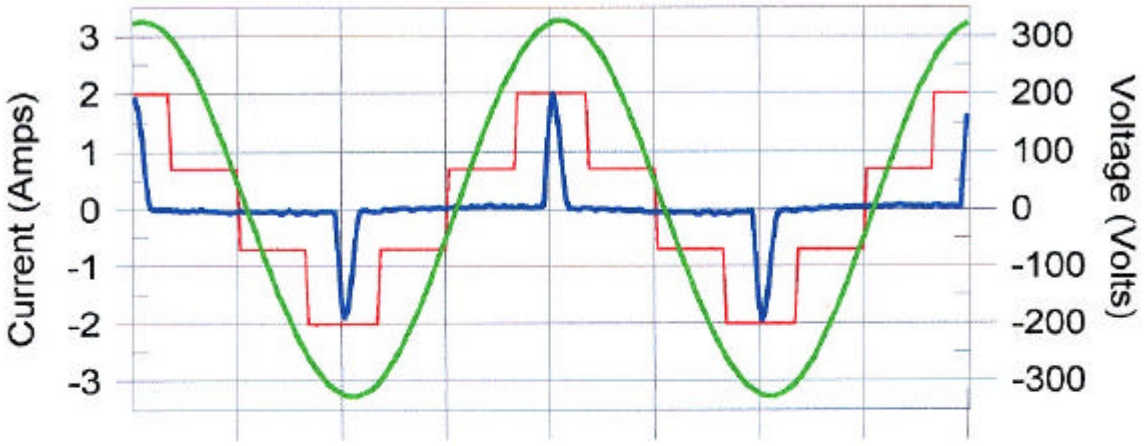


Result:

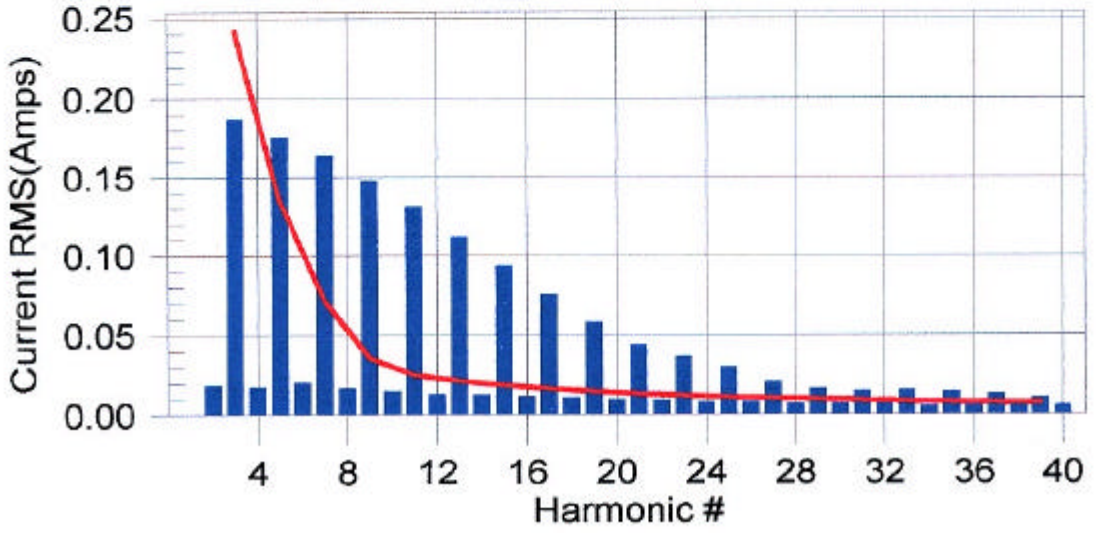
Please see the attached test data.

Test Result: Pass **Source qualification: Distorted**

Harmonics and Class D limit line **European Limits**



Current & voltage waveforms **It is 0.0% outside Class-D envelope**



Test result: Pass **Highest harmonic was #13 with 0.00 % of the limit.**

Test Result: Pass Source qualification: Distorted

Highest parameter values during test:

V_RMS (Volts):	231.36		
I_Peak (Amps):	2.005	I_RMS (Amps):	0.448
I_Fund (Amps):	0.205	Crest Factor:	6.131
Power (Watts):	45	Power Factor:	0.483

Harm#	Harmonics	Limit	% of Limit	Status
2	0.019			
3	0.187	0.242	0.00	Pass
4	0.017			
5	0.176	0.135	0.00	Pass
6	0.020			
7	0.164	0.071	0.00	Pass
8	0.017			
9	0.148	0.036	0.00	Pass
10	0.015			
11	0.131	0.025	0.00	Pass
12	0.013			
13	0.112	0.021	0.00	Pass
14	0.013			
15	0.094	0.019	0.00	Pass
16	0.011			
17	0.075	0.016	0.00	Pass
18	0.010			
19	0.058	0.014	0.00	Pass
20	0.009			
21	0.044	0.013	0.00	Pass
22	0.009			
23	0.036	0.012	0.00	Pass
24	0.008			
25	0.030	0.011	0.00	Pass
26	0.008			
27	0.021	0.010	0.00	Pass
28	0.007			
29	0.016	0.009	0.00	Pass
30	0.006			
31	0.015	0.009	0.00	Pass
32	0.006			
33	0.015	0.008	0.00	Pass
34	0.005			
35	0.014	0.008	0.00	Pass
36	0.006			
37	0.013	0.007	0.00	Pass
38	0.007			
39	0.010	0.007	0.00	Pass
40	0.005			

Test Result: Pass Source qualification: Distorted

Highest parameter values during test:

Voltage (Vrms):	231.36		
I_Peak (Amps):	2.005	I_RMS (Amps):	0.448
I_Fund (Amps):	0.205	Crest Factor:	6.131
Power (Watts):	45	Power Factor:	0.483

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.192	0.461	41.59	OK
3	0.471	2.074	22.70	OK
4	0.061	0.461	13.21	OK
5	0.106	0.925	11.50	OK
6	0.191	0.459	41.57	OK
7	0.119	0.689	17.26	OK
8	0.063	0.461	13.68	OK
9	0.112	0.458	24.41	OK
10	0.049	0.461	10.57	OK
11	0.183	0.230	79.51	OK
12	0.055	0.229	24.12	OK
13	0.182	0.230	78.82	OK
14	0.049	0.229	21.50	OK
15	0.122	0.231	52.65	OK
16	0.042	0.229	18.20	OK
17	0.083	0.231	35.75	OK
18	0.108	0.229	46.86	OK
19	0.118	0.231	51.06	OK
20	0.052	0.229	22.74	OK
21	0.128	0.230	55.71	OK
22	0.068	0.229	29.50	OK
23	0.283	0.230	123.34	Dist.
24	0.079	0.230	34.20	OK
25	0.284	0.229	123.77	Dist.
26	0.075	0.229	32.47	OK
27	0.192	0.230	83.34	OK
28	0.065	0.229	28.42	OK
29	0.108	0.230	47.09	OK
30	0.110	0.229	48.04	OK
31	0.059	0.229	25.51	OK
32	0.039	0.231	16.74	OK
33	0.066	0.229	28.76	OK
34	0.044	0.229	19.24	OK
35	0.060	0.229	26.13	OK
36	0.061	0.229	26.44	OK
37	0.086	0.229	37.69	OK
38	0.077	0.229	33.69	OK
39	0.071	0.229	31.03	OK
40	0.063	0.229	27.53	OK

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**

Time is too short for Plt plot

Parameter values recorded during the test:

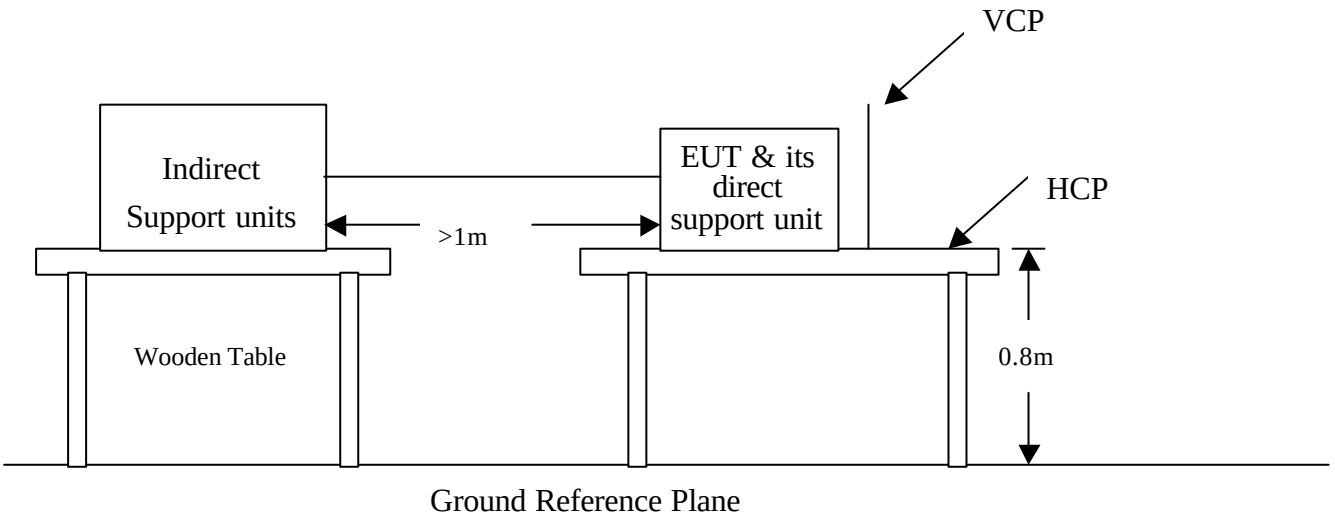
Vrms at the end of test (Volt):	229.79			
Highest dt (%):	0.19	Test limit (%):	3.14	Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.63	Test limit (%):	3.14	Pass
Highest dmax (%):	-0.64	Test limit (%):	3.80	Pass
Highest Pst (10 min. period):	0.232	Test limit:	0.950	Pass
Highest Plt (2 hr. period):	0.135	Test limit:	0.617	Pass

SECTION 3 IEC 61000-4-2 (ELECTROSTATIC DISCHARGE)

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	**:**	Enclosure
Basic Standard	**:**	IEC 61000-4-2
Requirements	**:**	±8 kV (Air Discharge)
		±4kV (Contact Discharge)
		±4kV (Indirect Discharge)
Performance Criteria	**:**	B (Standard require)
Temperature/Humidity	**:**	19^0C / 56%
Pressure	**:**	1018 mbar
Test By	**:**	Marion Yu

Block Diagram of Test Setup:



Test Procedure:

1. The EUT was located 0.1 m minimum from all side of the HCP.
2. The indirect support units were located 1 m minimum away from the EUT, but direct support unit was/were located at same location as EUT on the HCP and keep at a distance of 10 cm with EUT.
3. A communication test program was loaded and executed in Windows mode.
4. PC sent transmit data to remote side via EUT.
5. As per the requirement of EN 55024; applying direct contact discharge at the sides other than front of EUT at minimum 50 discharges (25 positive and 25 negative) if applicable, can't be applied direct contact discharge side of EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 50 indirect discharge (contact) to the front edge of horizontal coupling plane.
6. Other parts of EUT where it is not possible to perform contact discharge then selecting appropriate points of EUT for air discharge, a minimum of 10 single air discharges shall be applied.
7. The application of ESD to the contact of open connectors is not required.
8. Putting a mark on EUT to show tested points. The following test condition was followed during the tests.

Note: *As per IEC 61000-4-2:2001, with two 470k bleed resistors cable is connected between the EUT and HCP during the test applicable for power ungrounded or battery operating unit only.*

The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result (Pass/Fail)
Mini 25 /Point	±4kV	Contact Discharge	Pass
Mini 25 /Point	±4kV	Indirect Discharge HCP (Front)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Back)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Left)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Right)	Pass
Mini 10 /Point	±8kV	Air Discharge	Pass

**** The tested points to EUT, please refer to attached page.**
(Blue arrow mark for contact discharge, red arrow mark for air discharge.)

Performance & Result:

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

[V] ***PASS***	[ ] ***FAILED***

Observation: No any function degraded during the tests.

The Tested Points of EUT

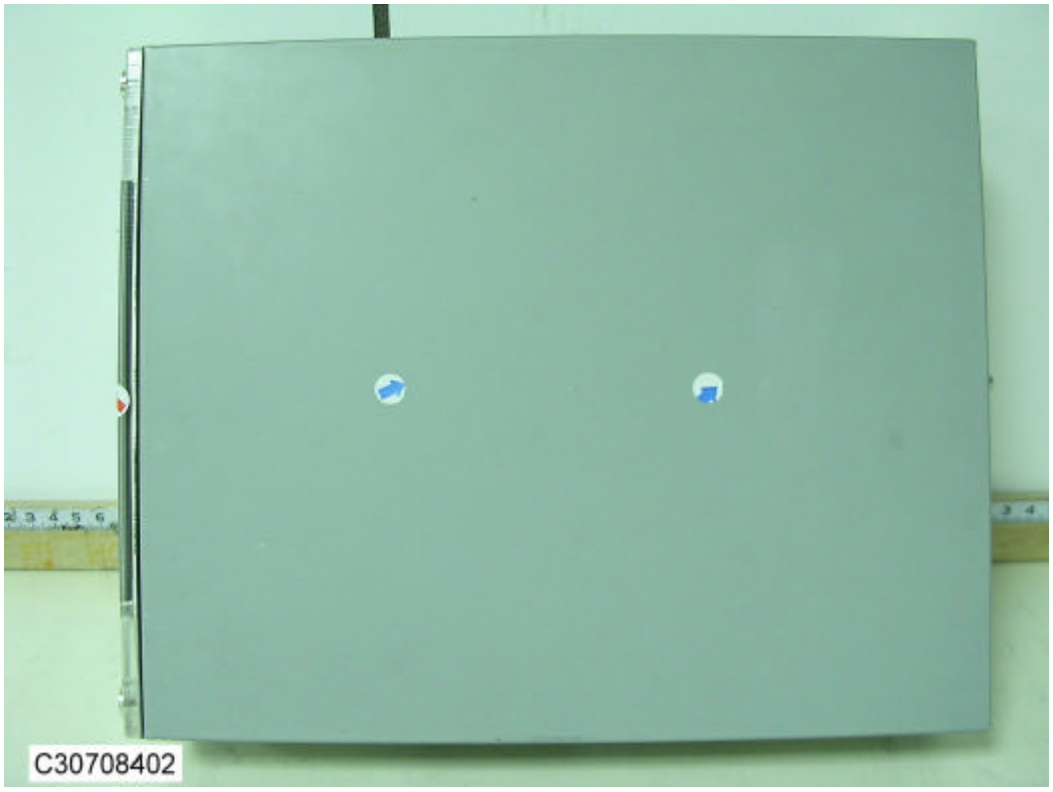
(Photo 1 of 5)

(Photo 2 of 5)

(Photo 3 of 5)

(Photo 4 of 5)

(Photo 5 of 5)

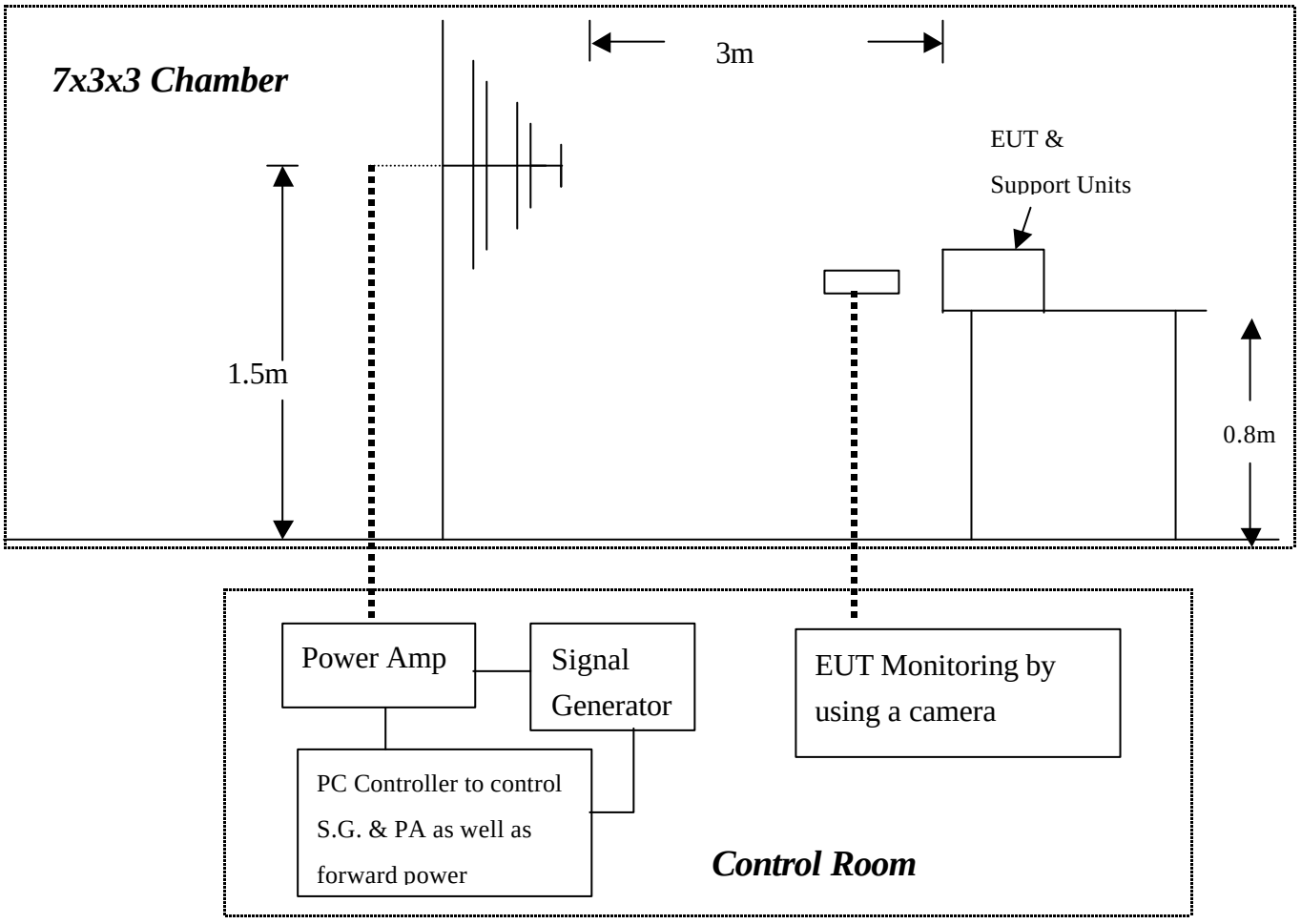


SECTION 4 IEC 61000-4-3 (RADIATED ELECTROMAGNETIC FIELD)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	**:**	Enclosure
Basic Standard	**:**	IEC 61000-4-3
Requirements	**:**	3 V/m / with 80% AM. 1kHz Modulation
Performance Criteria	**:**	A (Standard require)
Tester	**:**	Marion Yu
Temperature	**:**	19℃
Humidity	**:**	58%
Pressure	**:**	1018 mbar
Note	**:**	The EUT not have acoustic interfaces, the annex A of EN 55024 should not be applied.

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity.
2. Adjusting the cables to be exposed to the electromagnetic filed as possible.
3. Performing a Radiated Emission Scan in range of 30 to 1000 MHz prior to do RS test and records the more higher emission frequencies for the reference of RS test, due to antenna effectiveness.
4. Adjusting the monitoring camera to monitor the "H" message as clear as possible.
5. Setting the testing parameters of RS test software per IEC 61000-4-3.
6. Referring to the tested data of step 3 to performing the RS test from 80 to 1000 MHz.
7. Recording the test result in following table.
8. Changing the EUT to the other side and repeat step 3 to 6, until 4 sides of EUT were verified.

IEC 61000-4-3 Final test conditions:

Test level : 3V/m
Steps : 1 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	3V	Yes	H	Front	Pass
80-1000	3V	Yes	V	Front	Pass
80-1000	3V	Yes	H	Right	Pass
80-1000	3V	Yes	V	Right	Pass
80-1000	3V	Yes	H	Back	Pass
80-1000	3V	Yes	V	Back	Pass
80-1000	3V	Yes	H	Left	Pass
80-1000	3V	Yes	V	Left	Pass

Performance & Result:

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

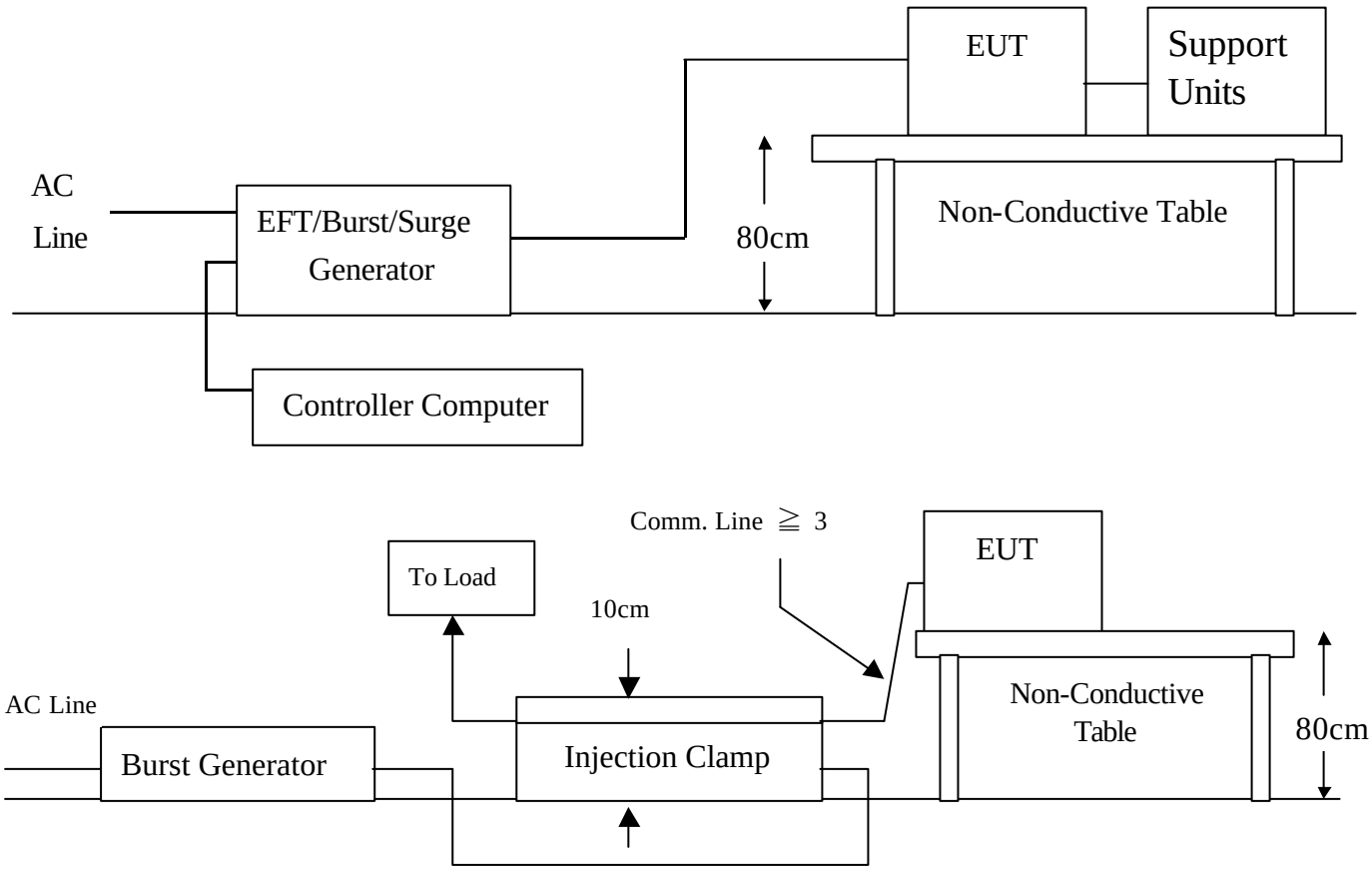
[V] ***PASS***	[ ] ***FAILED***
Observation: No any function degraded during the tests.	

SECTION 5 IEC 61000-4-4 (FAST TRANSIENTS/BURST)

FAST TRANSIENTS/BURST IMMUNITY TEST

Port	**:** On Power Lines
Basic Standard	**:** IEC 61000-4-4
Requirements	**:** ±1kV for Power Supply Lines
Performance Criteria	**:** B (Standard require)
Temperature	**:** 19℃
Humidity	**:** 58%
Pressure	**:** 1018 mbar
Test By	**:** Marion Yu

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground reference plane.
2. A 1.0 meter long power cord was attached to EUT during the test.
3. The length of communication cable between communication port and clamp was keeping within 1 meter.
4. A test program was loaded and executed in Windows mode.
5. The data was display on the monitor and filling the screens.
6. The test program exercised related support units sequentially.
7. Repeating step 3 to 6 through the test.
8. Recording the test result as shown in following table.

Test conditions:
Impulse Frequency: 5kHz
Tr/Th: 5/50ns
Burst Duration: 15ms
Burst Period: 300mS

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L1	±1	Direct	Pass
N	±1	Direct	Pass
PE	±1	Direct	Pass
L1+N	±1	Direct	Pass
L1+PE	±1	Direct	Pass
N+PE	±1	Direct	Pass
L1 + N + PE	±1	Direct	Pass

Performance & Result:

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

[V] ***PASS*** [ ] ***FAILED***

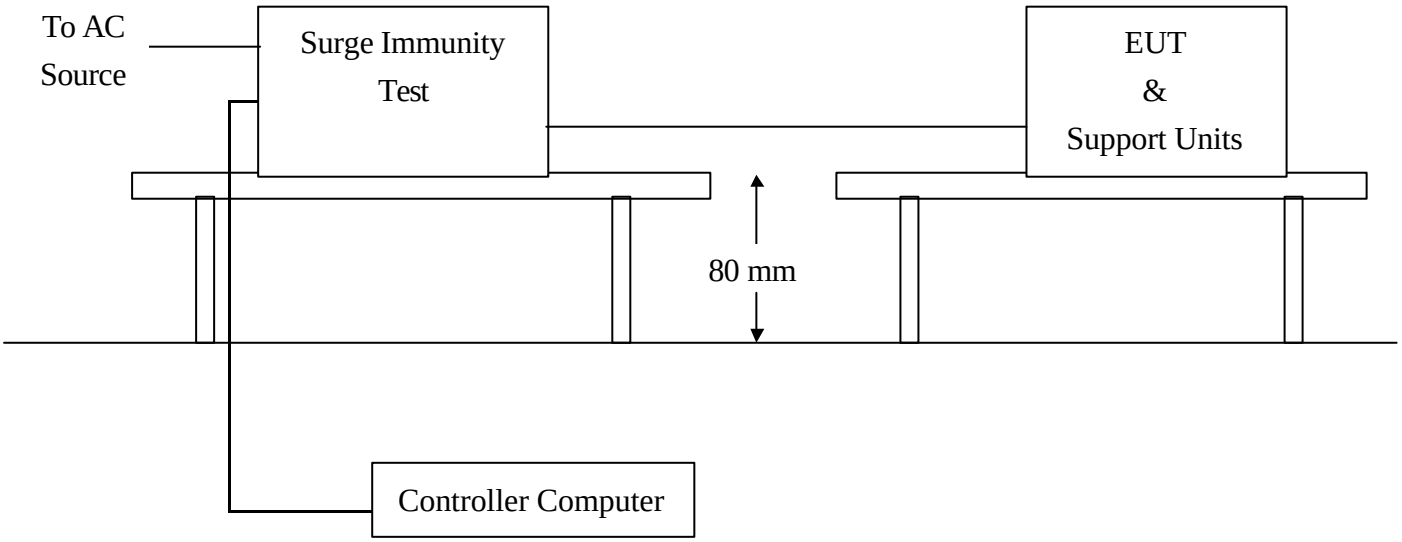
Observation: No any function degraded during the tests.

SECTION 6 IEC 61000-4-5 (SURGE IMMUNITY)

SURGE IMMUNITY TEST

Port	**:**	Power Cord
Basic Standard	**:**	IEC 61000-4-5
Requirements	**:**	+/- 1kV (Line to Line of Power Port)
		+/- 2kV (Line to Earth of Power Port)
Performance Criteria	**:**	B (Standard require)
Tester	**:**	Marion Yu
Temperature	**:**	19℃
Humidity	**:**	56%
Pressure	**:**	1018 mbar

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground floor.
2. A test program was loaded and executed in Windows mode.
3. The data was display on the monitor and filling the screens.
4. The test program exercised related support units sequentially.
5. Repeating step 3 to 4 through the test.
6. Recording the test result as shown in following table.

Test conditions:
Voltage Waveform : 1.2/50 us
Current Waveform : 8/20 us
Polarity : Positive/Negative
Phase angle : 0°, 90°, 270°
Number of Test : 5

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
L1-L2、 L1-PE、 L2-PE	1	Positive	Capacitive	Pass
L1-L2、 L1-PE、 L2-PE	1	Negative	Capacitive	Pass
L1-PE、L2-PE	2	Positive	Capacitive	Pass
L1-PE、L2-PE	2	Negative	Capacitive	Pass

Performance & Result:

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

[V] ***PASS*** [ ] ***FAILED***

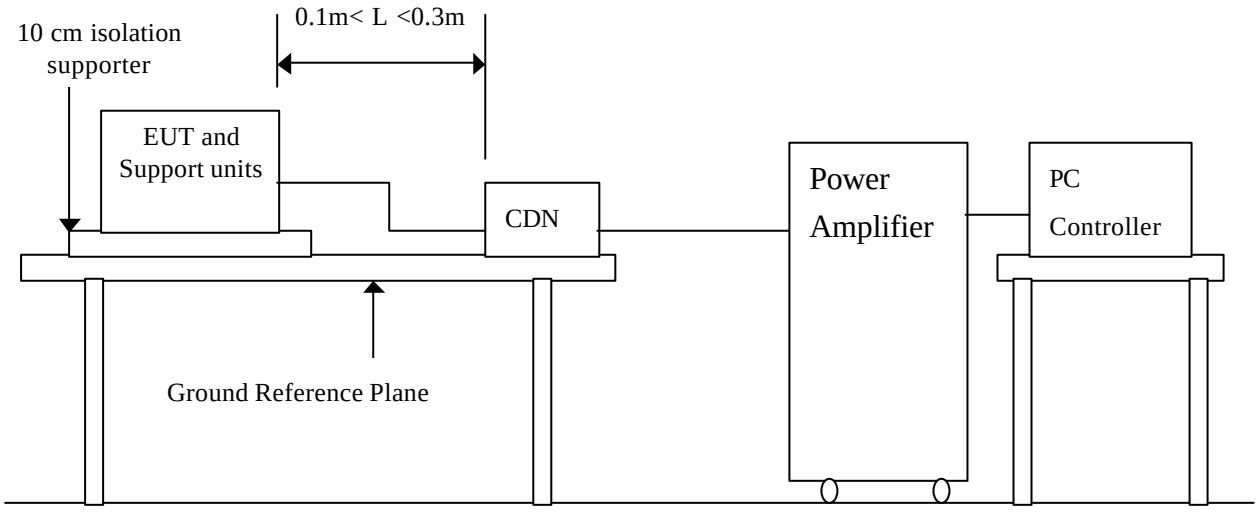
Observation: No any function degraded during the tests.

SECTION 7 IEC 61000-4-6 (CONDUCTED DISTRBANCE/INDUCED BY RADIO-FREQUENCY FIELD)

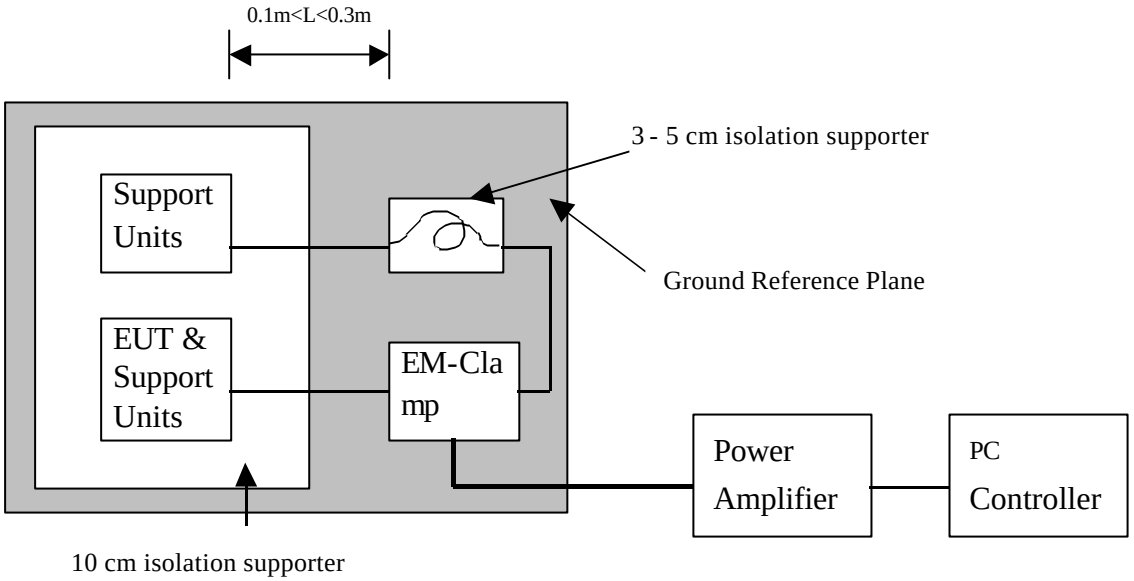
CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS

Port	**:** AC Port
Base Standard	**:** IEC 61000-4-6
Requirements	**:** 3 V with 80% AM. Modulation
Injection Method	**:** CDN-M3 for Power Cord
Performance Criteria	**:** A (Standard require)
Temperature	**:** 19^0C
Humidity	**:** 56%
Pressure	**:** 1018 mbar
Test By	**:** Marion Yu

Block Diagram of Test Setup:



Top view:



Test Procedure:

1. The EUT and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
2. Transmit data messages were displayed on screen of Monitor.
3. Adjusting the monitoring camera to monitor the transmit data message as clear as possible.
4. Setting the testing parameters of CS test software per EN 61000-4-6.
5. Recording the test result in following table.

Test conditions:

Frequency Range : 0.15MHz-80MHz

Frequency Step : 1% of fundamental

Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	3V	Yes	Pass

Performance & Result:

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

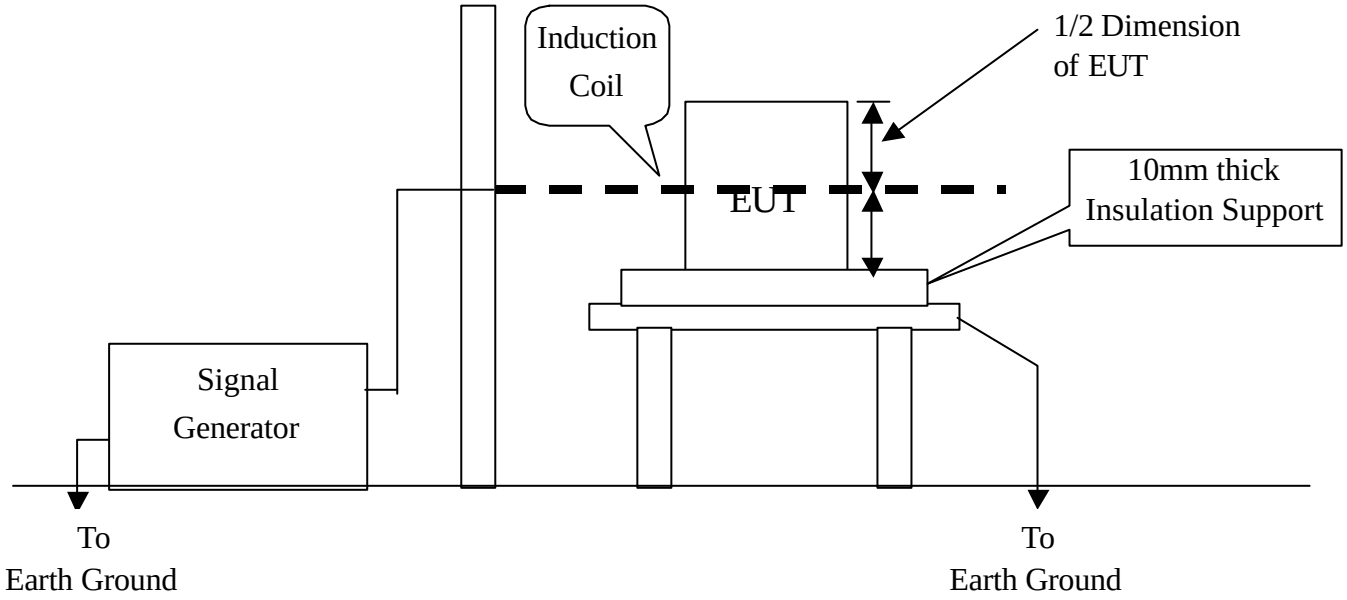
[V] ***PASS*** [ ] ***FAILED***
Observation: No any function degraded during the tests.

SECTION 8 IEC 61000-4-8 (POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST)

POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

Port	**:** Enclosure
Basic Standard	**:** IEC 61000-4-8
Requirements	**:** 1 A/m
Performance Criteria	**:** A (Standard Required)
Temperature	**:** 19°C
Humidity	**:** 56%
Pressure	**:** 1018 mbar
Test By	**:** Marion Yu

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on Ground Reference Plane with the interposition of a 0.1 m thickness insulation support.
2. Putting the induction coil on horizontal direction.(X direction)
3. A test program was loaded and executed in Windows mode.
4. The data was sent to the screen of EUT and filling the screen with upper case of "H" patterns.
5. The test program exercised related support units sequentially.
6. Repeating step 3 to 5 through the test.
7. Recording the test result as shown in following table.
8. Rotating the induction coil by 90^0 (Y direction) then repeat step 3 to 7.
9. Rotating the induction coil by 90^0 again (Z direction) then repeat step 3 to 7.

*. Test conditions:
Field Strength: 1A/m
Power Freq.: 50Hz
Orientation: X, Y, Z

Orientation	Field	Result (Pass/Fail)	Remark
X	1A	Pass	No any function degraded during the tests.
Y	1A	Pass	No any function degraded during the tests.
Z	1A	Pass	No any function degraded during the tests.

Performance & Result:

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

[V] ***PASS*** [ ] ***FAILED***

Observation: No any function degraded during the tests.

SECTION 9 IEC 61000-4-11
(VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS)

VOLTAGE DIPS / SHORT INTERRUPTIONS

Port : AC mains

Basic Standard : IEC 61000-4-11 (1994)

Requirement : PHASE ANGLE 0, 45, 90, 135, 180, 225, 270, 315 degrees

Voltage Dips	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	0.5	B
	70	30	25	C

Voltage Interceptions	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	250	C

Test Interval : Min. 10 sec.

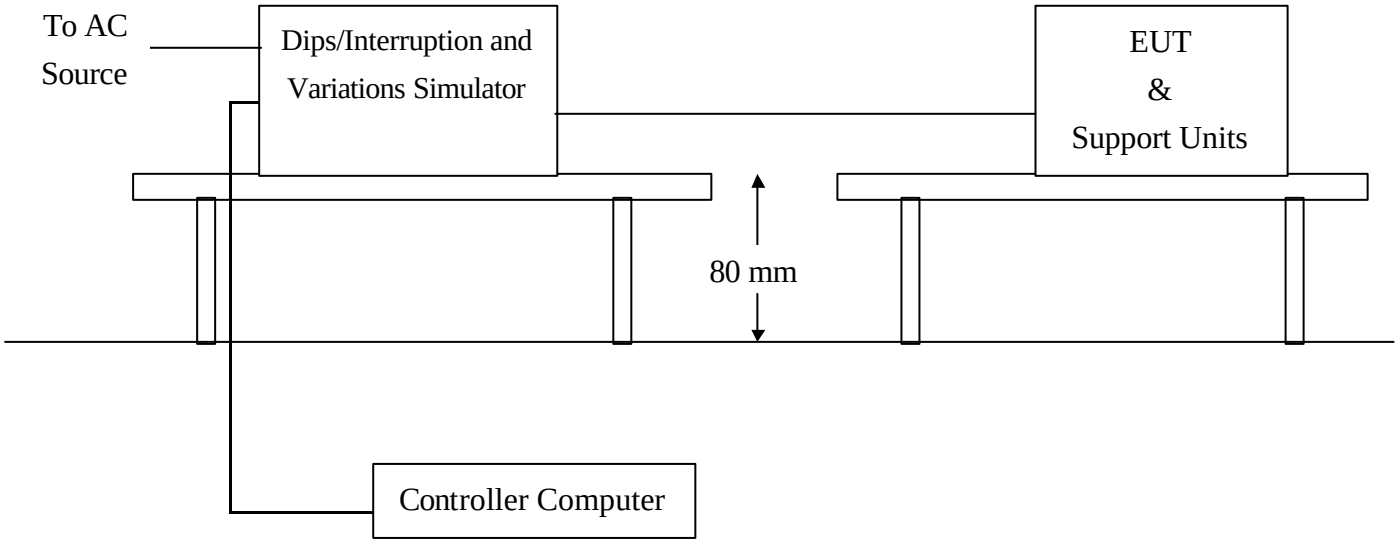
Temperature : 19^0C

Humidity : 56%

Pressure : 1018 mbar

Test By : Marion Yu

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table, 0.8 m away from ground floor.
2. A test program was loaded and executed in Windows mode.
3. The data was displayed on the monitor and filling the screens.
4. The test program exercised related support units sequentially.
5. Setting the parameter of tests and then Perform the test software of test simulator.
6. Conditions changes to occur at 0 degree crossover point of the voltage waveform.
7. Repeating step 3 to 4 through the test.
8. Recording the test result in test record form.

Test conditions:

The duration with a sequence of three dips/interruptions with interval of 10s minimum (between each test events)

Voltage Dips:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	0.5	Normal	A
70	30	25	Normal	A

Voltage Interruptions:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	250	EUT shut down, but EUT can be auto recovered after EUT restart.	C

Normal: No any functions degrade during and after the test.

Performance & Result:

Criteria A: The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

Criteria B: The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

Criteria C: Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

[V] ***PASS***	[ ] ***FAILED***

APPENDIX 1

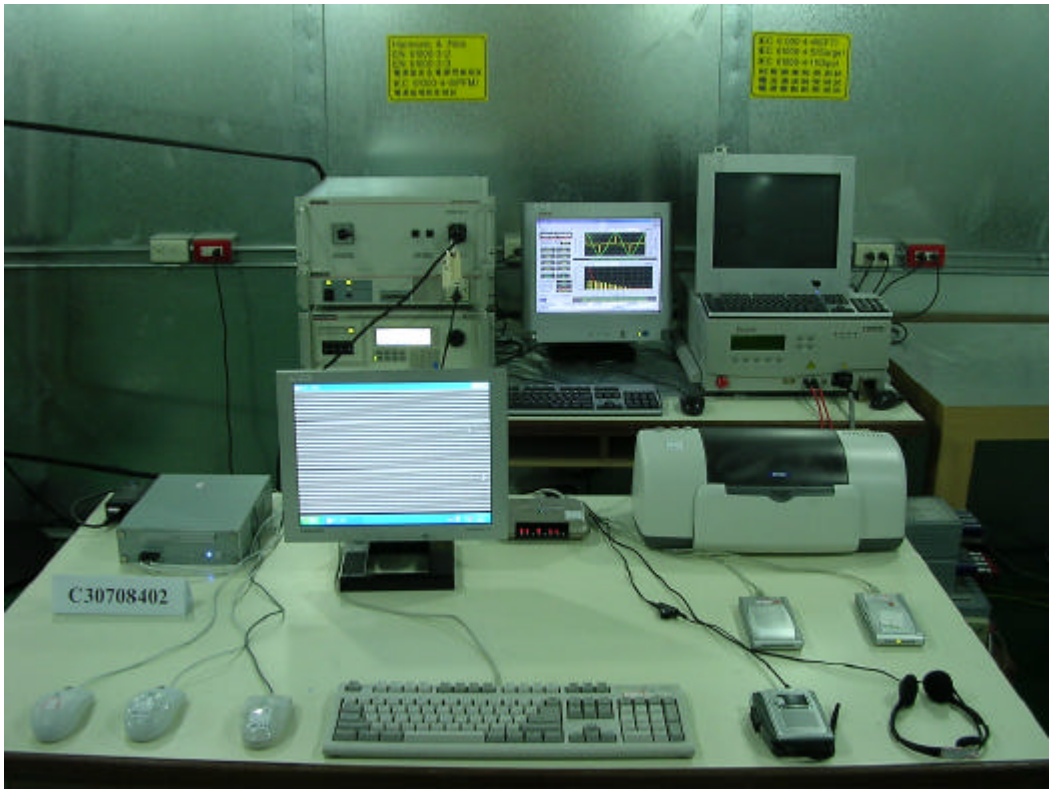
PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST (EN 55022)

RADIATED EMISSION TEST (EN 55022)

POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST

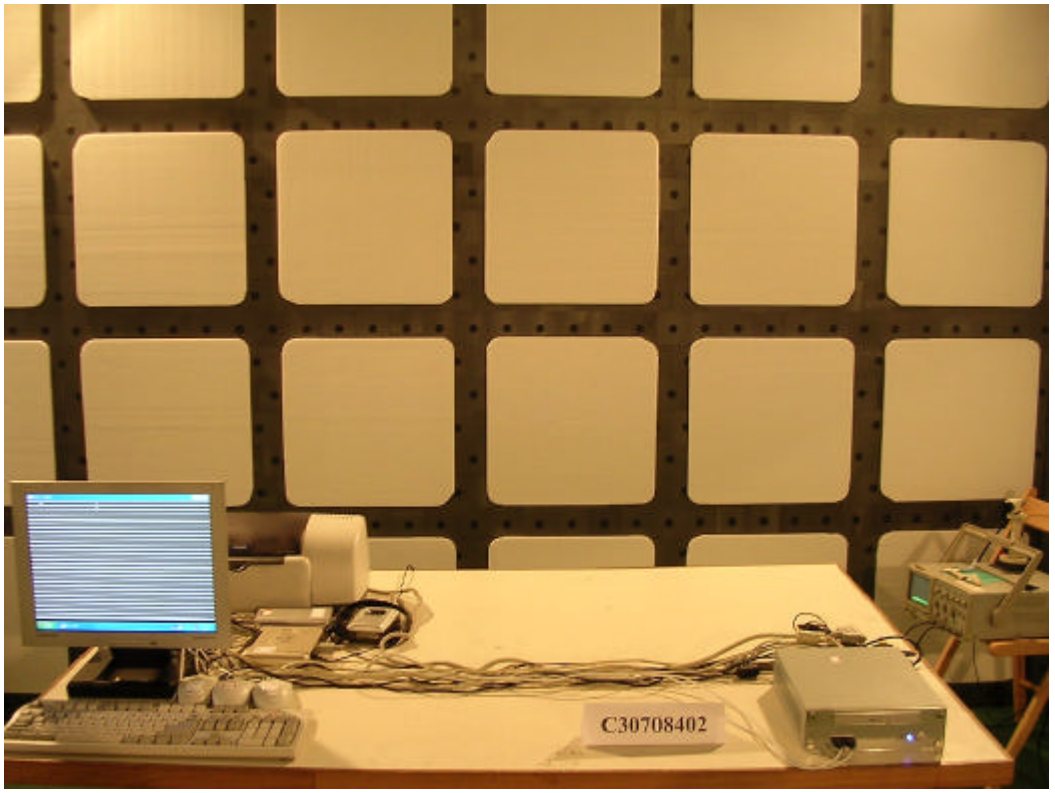
(EN 61000-3-2, EN 61000-3-3)



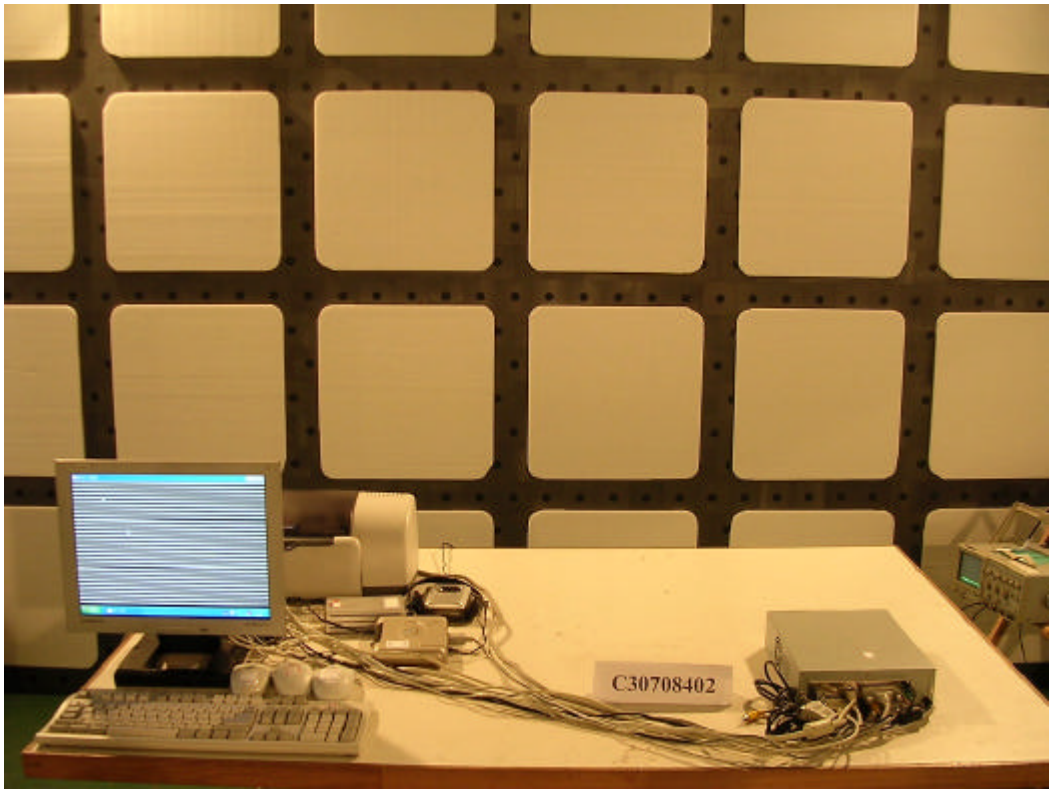
ELECTROSTATIC DISCHARGE TEST (IEC 61000-4-2)

RADIATED ELECTROMAGNETIC FIELD (IEC 61000-4-3)

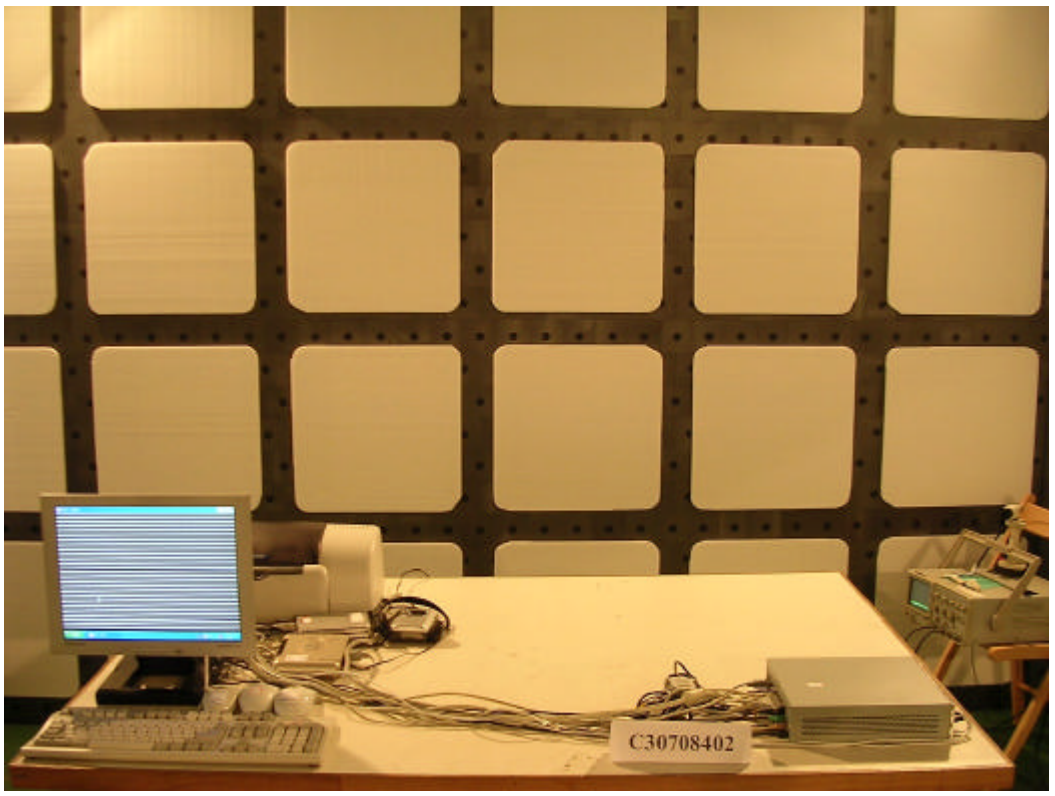
Front View



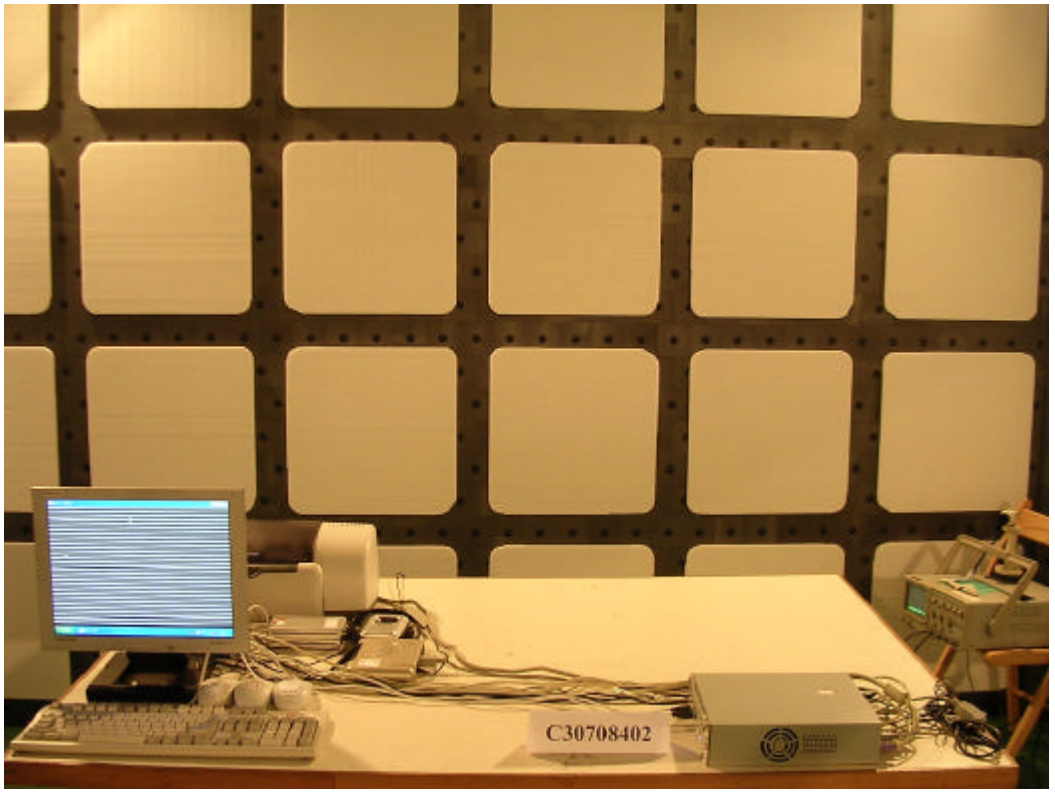
Back View



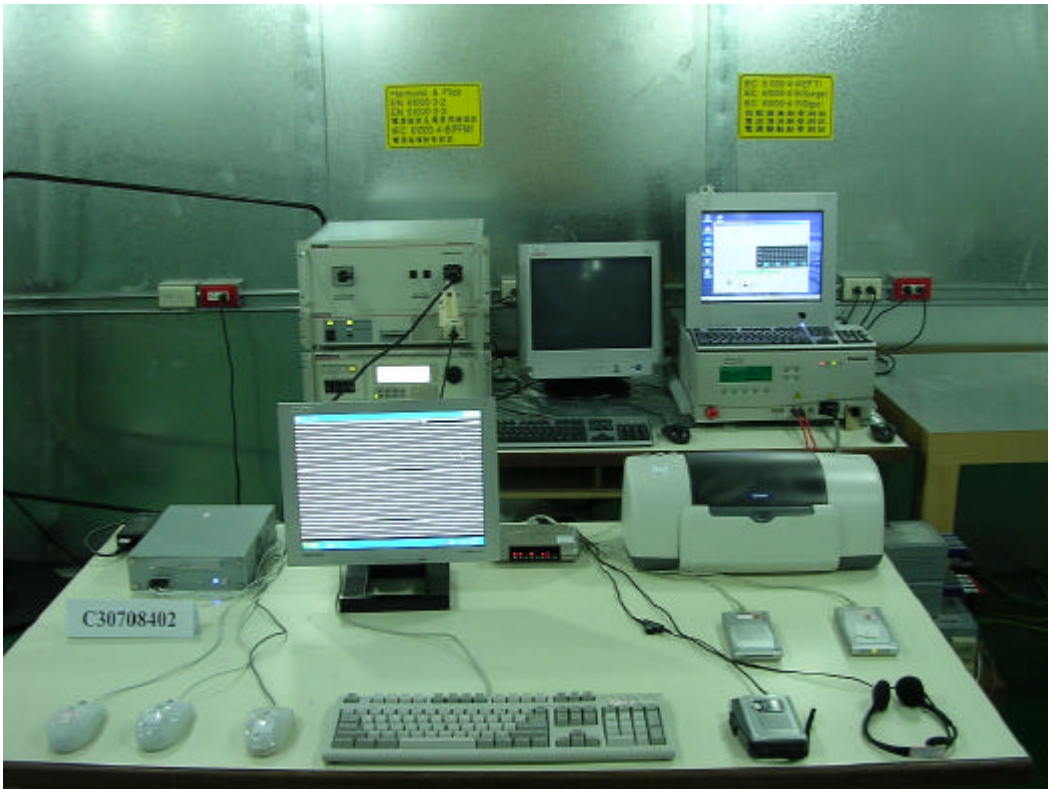
Left View



Right View



FAST TRANSIENTS/BURST TEST & SURGE IMMUNITY TEST (IEC 61000-4-4/5 FOR POWER)



CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST (IEC 61000-4-6 FOR POWER)

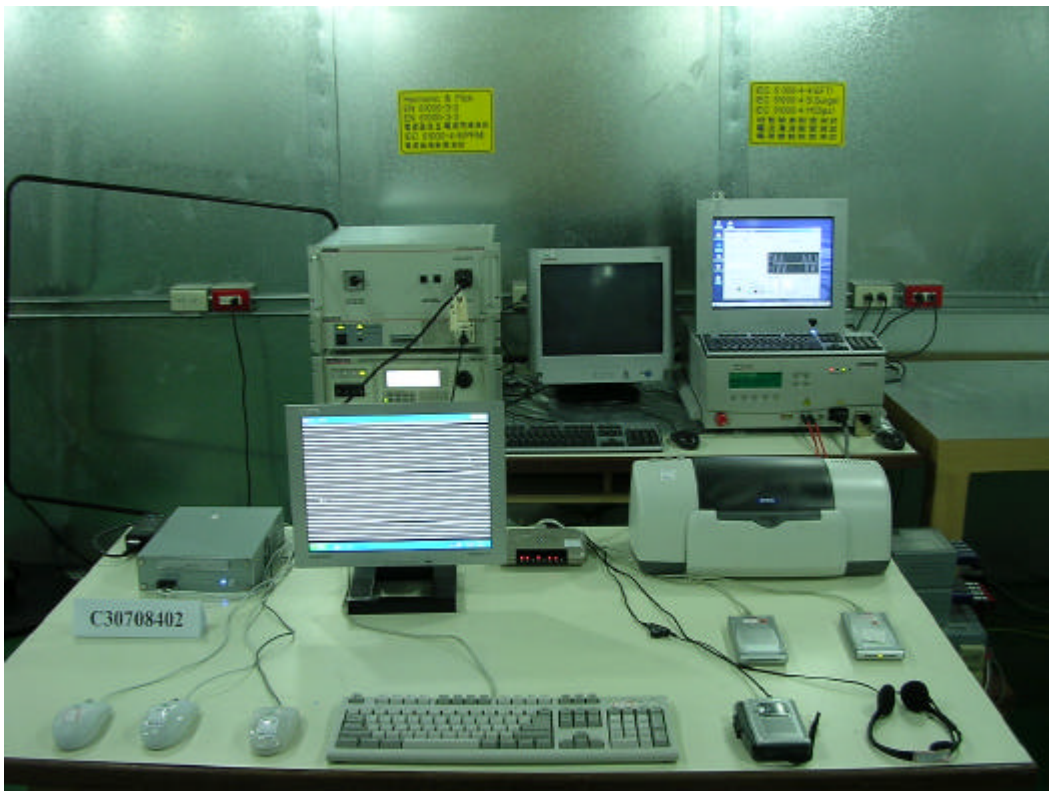
POWER FREQUENCY MAGNETIC FIELD (IEC 61000-4-8)

IEC 61000-4-8 X

IEC 61000-4-8 Y

IEC 61000-4-8 Z

VOLTAGE DIPS / INTERRUPTION TEST (IEC 61000-4-11)

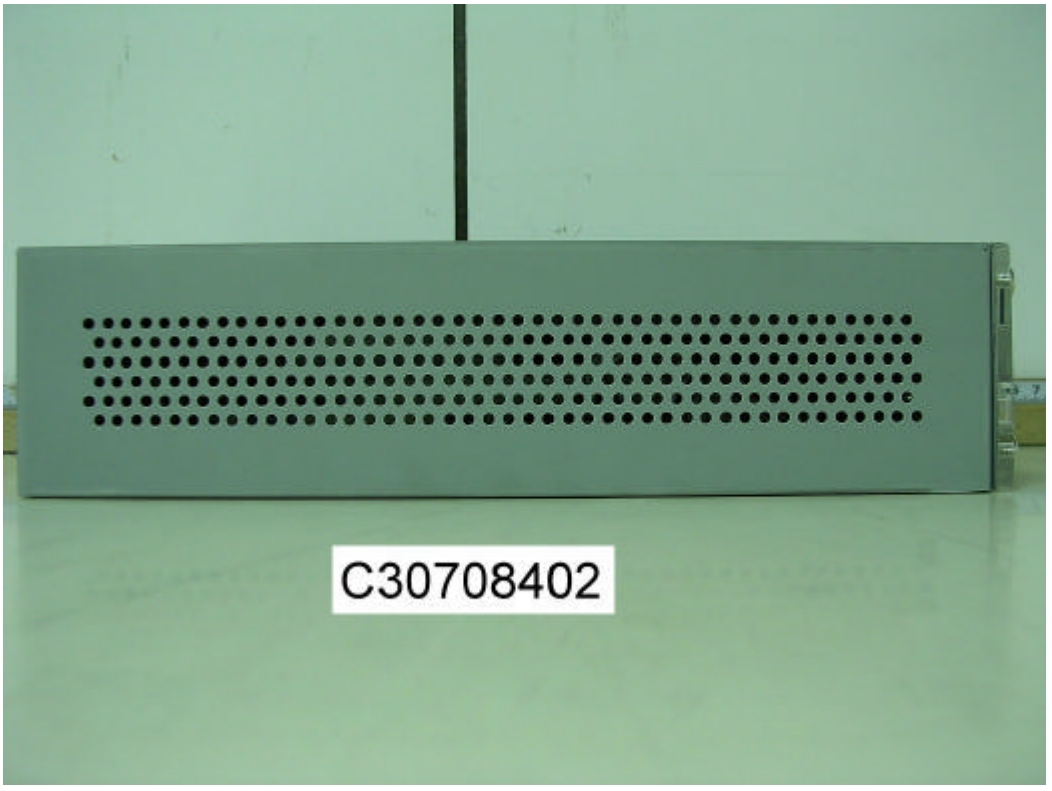


APPENDIX 2

PHOTOGRAPHS OF EUT

Model Number : 3688

C30708402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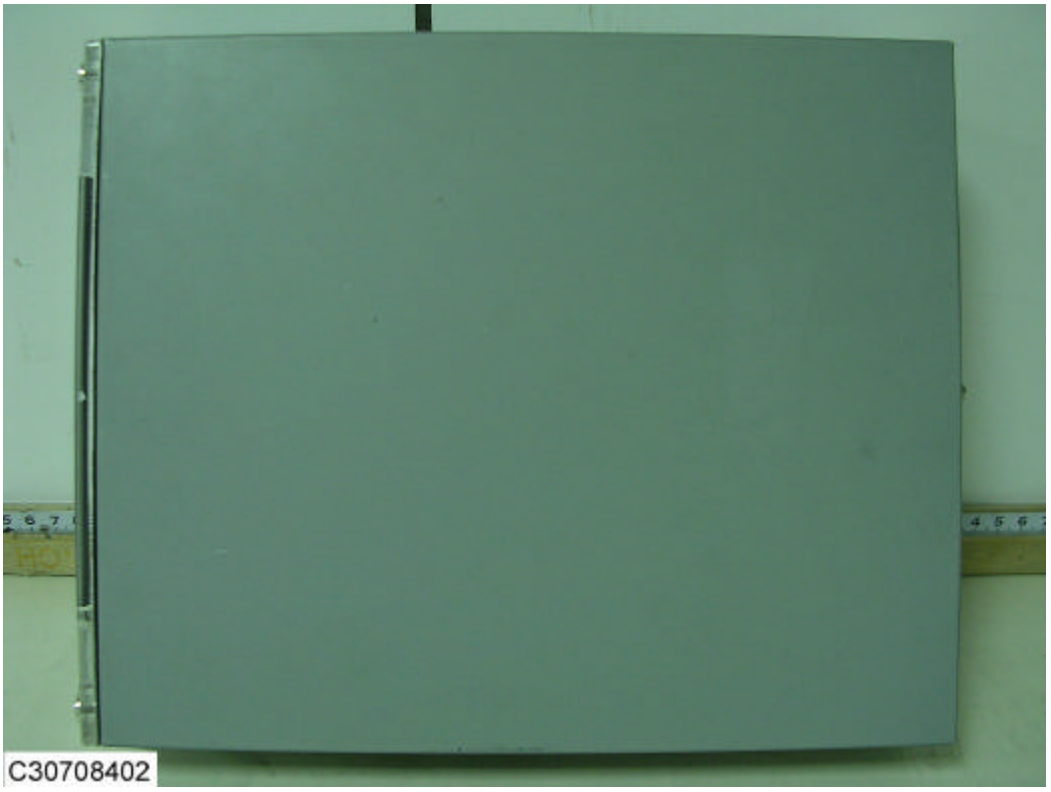
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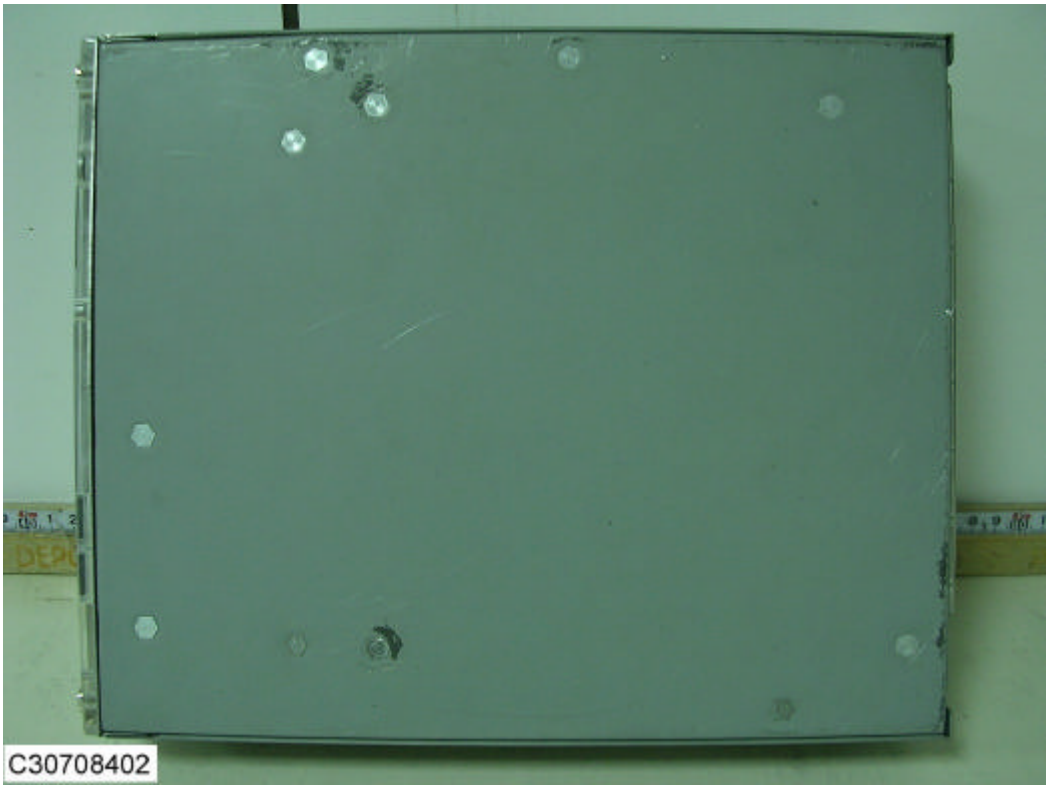
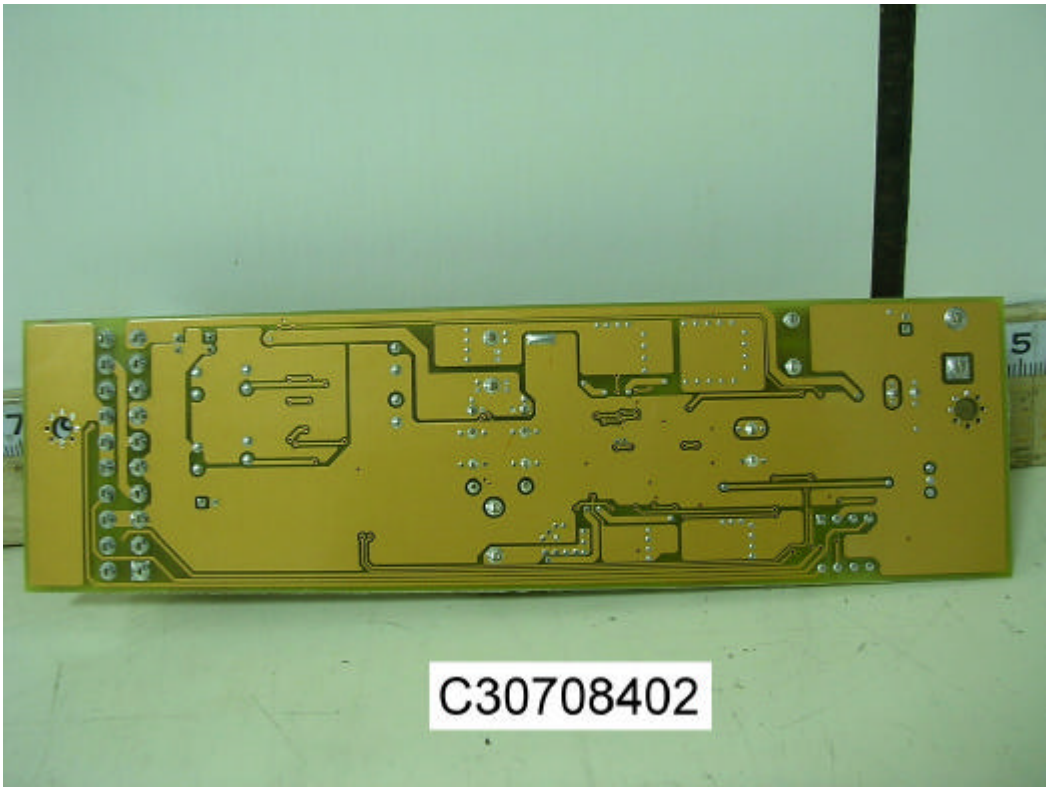

C30708402

IBM
Travelstar
C30708402

MOREX PROCASE
morex.com.tw procase.com.tw
C30708402

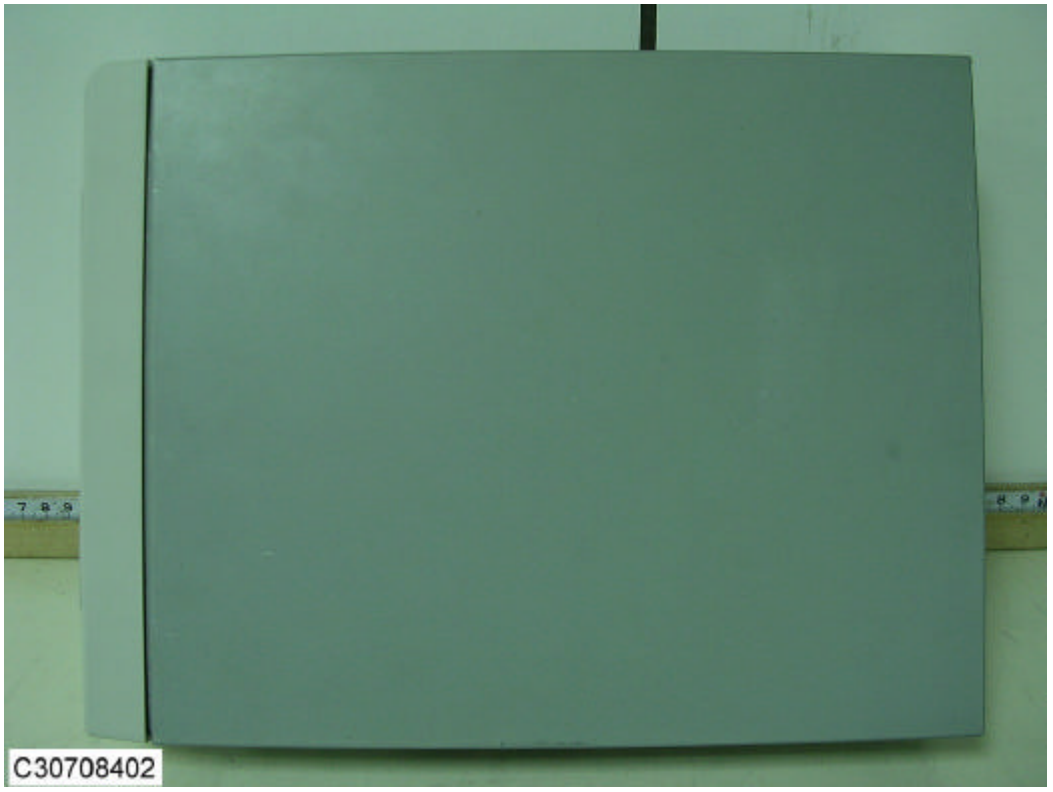


Model Number : 3677

C30708402

C30708402

C30708402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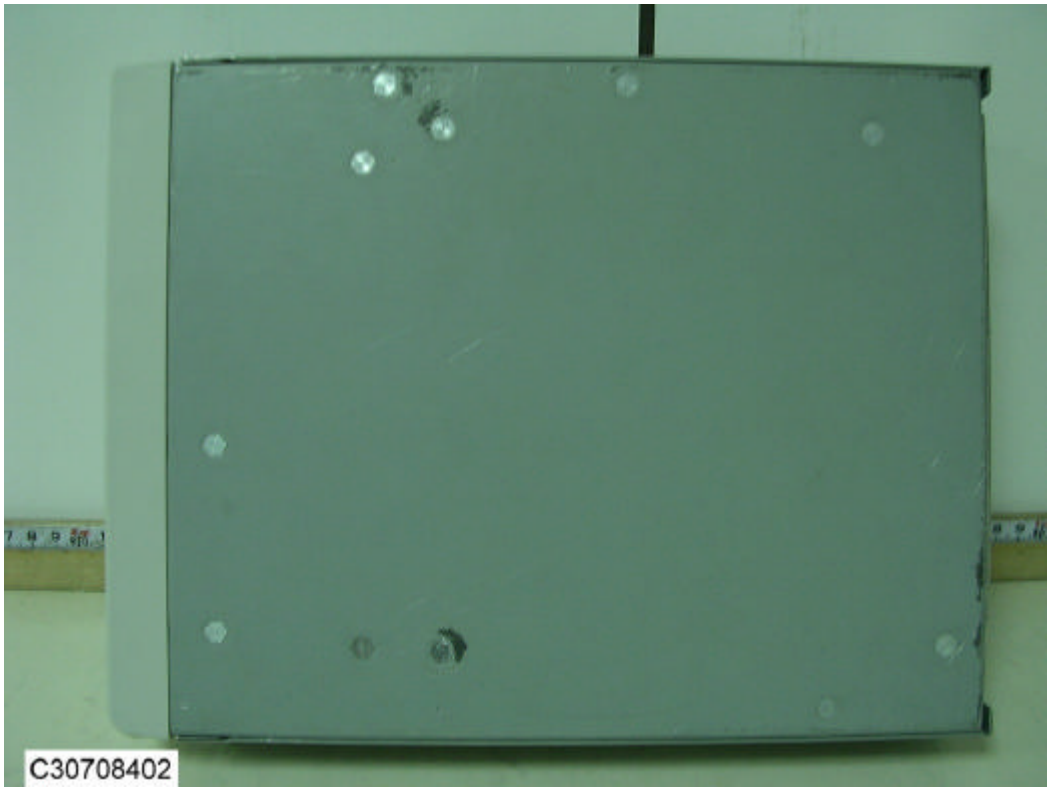
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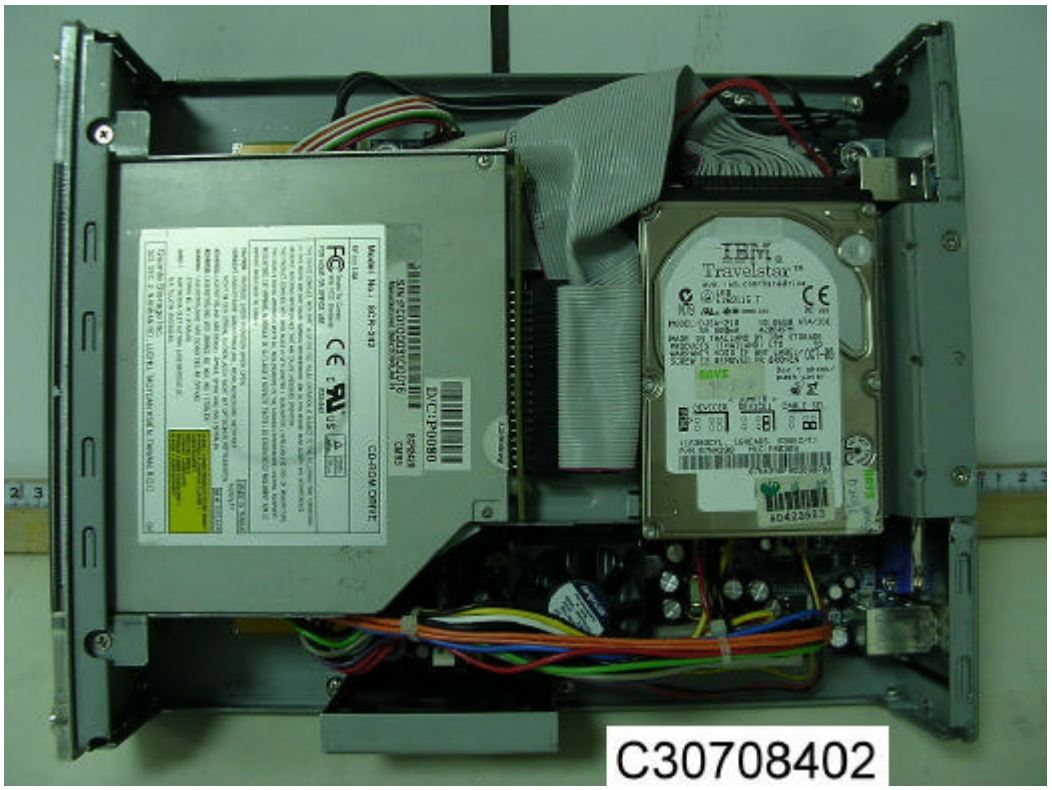
IBM
Travelstar
C30708402

Adaptor

ILAN ELEC. LTD.
AC ADAPTER
MODEL:FI9603A
AC INPUT:100-240V ~ 1.8A 50-60Hz
DC OUTPUT:12V ⎓ 4.58A
FUSE RATING:T2.5A/250V OR 300V
91-57948
INPUT:AC 100-240V
50-60Hz 125-175VA
OUTPUT:DC 12V 4.58A
ILAN ELECTRONICS LTD.
CAUTION:
>FOR INDOOR USE ONLY
>I.T.E. USE ONLY
>Endast för Kontorsmaskin
DATE CODE:
LPS
C30708402

C30708402

(E.P.S.) INC.
AC ADAPTER
MODEL:F19603A
AC INPUT:100-240V~1.8A 50-60Hz
DC OUTPUT:12V ⎓ 4.58A
FUSE RATING:T2.5A/250V OR 300V
CAUTION:
>FOR INDOOR USE ONLY
>I.T.E. USE ONLY
>Endast för Kontorsmaskin
DATE CODE:
LPS
TEST OK
HI-POT OK
C30708402

C30708402

C30708402